

Radha Adhar

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EXPERIENCE

Office of Senator Tammy Duckworth, February 2017 – Present, *Senior Policy Advisor for Energy, Environment and Science*

- Staff Senator Duckworth on the Environment and Public Works Committee and the Special Committee on the Climate Crisis. Work includes developing and advancing her policy agenda, drafting statements and questions for Congressional hearings, advising the Senator on votes in Committee and on the Senate floor and conducting government oversight. Oversight has led to action taken by the U.S. Environmental Protection Agency's Office of the Inspector General and the Government Accountability Office.
- Primary author of 16 pieces of legislation including the Marshall Plan for Coal Country, Get the Lead Out of Federally Assisted Housing and the Low Income Solar Act. Bills have the support of major environmental organizations, organized labor, and industry groups. Many have passed into law including the Lincoln Heritage Area Act, major provisions of the Get the Lead Out of Military Housing Act, and the DOE National Labs Jobs ACCESS Act.
- Led the creation of the Senate's first-ever Environmental Justice Caucus and currently serve as main coordinator. Work includes recruiting 18 Senators, drafting and passing legislation, conducting oversight, and providing assistance to environmental justice groups across the Nation. Notable successes include the request and delivery of technical changes for a rule titled Miscellaneous Organic Chemical Manufacturing: National Emission Standards for Hazardous Air Pollutants (MON NESHAP); passing meaningful wins in the Senate's Water Resources and Development Act and Drinking Water infrastructure Act of 2020; and garnering historic funding for environmental justice programs at EPA .
- Provides strategic guidance to senior leadership including state staff; advises and accompanies senior leaders at meetings and public forums.

U.S. Department of Energy, August 2016 – February 2017, *Advisor, Jobs Strategy Council, Office of the Secretary*

- Managed the Agency's Congressional and stakeholder outreach efforts to extend incentives for carbon capture and sequestration technologies (CCUS).
- Led a coalition of labor and management organizations in the healthcare industry focused on reducing energy use in their industry.
- Participated in the coordination of the Obama Administration-wide resources as they relate to energy and our economic development and workforce needs.

Sierra Club, Washington, DC February 2012 – August 2016, *Washington Representative, Federal Policy*

- Developed legislative and policy priorities for the \$50 million national Beyond Coal Campaign; represented these positions to the Obama Administration, Congress, and other organizations.
- Met daily with congressional staff including legislative directors, energy and environmental legislative assistants; authored and sent policy positions and vote recommendations on pertinent legislation.

- Organized congressional briefings with key coalition allies, including labor and industry, on renewable energy tax credits.
- Led the effort to build Sierra Club's relationships with key allies, including new congressional members, the Congressional Black Caucus, and the Congressional Hispanic Caucus.

Natural Resources Defense Council, Washington, DC May 2010 – February 2012, *Program Assistant*

- Developed strategy on internal and external activities related to the 2012 Earth Summit, "Rio+20," and community climate campaigns; wrote factsheets, weekly reports, meeting notes, and internal memos to reinforce strategic direction of campaigns for senior staff and community partners; managed \$1.5 million in programmatic budgets.

Blue Green Alliance, Washington, DC February 2010 – May 2010, *Fellow*

- Organized and coordinated partner organization content for Good Jobs, Green Job, a 12,000 person, three-day conference.

EnDyna Inc., Mclean, VA August 2008 – February 2010, *Research Analyst*

- Principal writer of an EPA report that explored sources of lead exposure in the environment; led EPA and EnDyna team in organizing and developing the products and logistics for the 2009 Community Action for a Renewed Environment training workshop.

EDUCATION

- Johns Hopkins University, December 2016, M.S. in Energy Policy and Climate Change Science, *cum laude*
- University of North Carolina, Chapel Hill, May 2008, B.S. Biology, Minor Chemistry

MEDIA APPEARANCES

- Named "someone you should know" by Politico's Morning Energy newsletter in 2016.
- Has appeared in The Hill, Politico, Morning Consult, Utility Dive, Forbes, Greentech Media, ThinkProgress, Huffington Post, E&E News, and radio.

Faisal Amin

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EXPERIENCE

PT Fund, Inc. (Biden-Harris Transition), Washington DC

August 2020 to Present

United States Government Accountability Office, Washington, DC

Assistant General Counsel, Appropriations Law Group

March 2020 – August 2020

Senior Attorney, Budget and Appropriations Law Group

September 2005 – March 2013, July 2017 – March 2020

- General Counsel's Award, 2010; Customer Service Award, 2018.
- Led a new team focused on providing appropriations law assistance to executive branch agencies. Developed, wrote, and edited formal decisions regarding federal appropriations law. Contributor to GAO publication, *Principles of Federal Appropriations Law* (Red Book). Developed and wrote legislative language and legislative history.
- Instructor of GAO appropriations law course. Advise GAO on internal appropriations matters. Developed GAO's Antideficiency Act reports website. Assisted audit teams evaluating agency programs.
- Active in agency initiatives, including diversity in recruitment and electronic records management.
- Detailee to Senate Interior Appropriations Subcommittee, where developed and advocated for EPA \$9B appropriation.

Office of Administration, Washington DC

Deputy General Counsel (Acting General Counsel)

January 2017 – July 2017

- Led team of lawyers and support staff to provide legal advice and counsel to White House officials on sensitive and complex matters related to Federal labor and employment, internal investigations, claims, Government contracts, appropriations, Government ethics, records, and security (cyber, physical, and personnel).
- Served as Designated Agency Ethics Official. Responsible for Congressional oversight and review activities.

Office of the Vice President, Washington DC

Deputy Assistant to the President and Deputy Chief of Staff

October 2016 – January 2017

- Oversaw operations of all staff and activities in the Office of the Vice President, including civilian and military personnel, as well as agency detailees and assignees. Reviewed legal guidance and undertook risk assessment to establish and implement office policy. Served on Vice President's emergency staff for continuity of government.
- Directly managed transition activities to correctly and efficiently close down the office, establish a transition office, brief the Vice President-elect team on office operations, and close out the Residence of the Vice President.

Executive Office of the President, Washington DC

Chief Financial Officer

September 2015 – January 2017

- Responsible for centralized financial management, procurement, and travel services for all 11 offices throughout the Executive Office of the President with annual appropriations totaling ~\$750 million. Presented budget to Congress.
- Primary liaison between White House stakeholders for communications and Hill correspondence on fiscal law matters.
- Oversaw financial operations for many complex transitions, including information technology and accounting systems. Led team during 8th unqualified audit opinion, as well as GAO review of certificated expenditures.

Office of the Vice President, Washington, DC

Director of Administration and Associate Counsel for Fiscal Law

March 2013 – September 2015

- Planned, implemented, and executed \$7 million budget across four appropriations to support the priorities of the Vice President. Analyzed and approved expenditures. Reviewed financial statements and invoices to ensure appropriate use of government funds. Served as agency funds manager and certifying officer. Edited and reviewed agency congressional budget justification. Conducted annual audit of agency financial management processes.
- Oversaw all office administrative operations, including travel arrangements, internship program, facilities management, and human resources. Reviewed office's weekly report for the President's chief of staff.
- Reviewed and approved all military officer and enlisted personnel evaluations, decoration recommendations, and personnel requests and selections. Liaison for military disciplinary actions. Agency continuity program officer.

EDUCATION

University of Arizona, James E. Rogers College of Law, Tucson, Arizona

J.D., 2005

- Graduation speaker; Articles Editor, Arizona Journal of International and Comparative Law

University of California, Berkeley, California

A.B., History, 1999

Victoria (Vicki) Arroyo

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Experienced environmental attorney, policy and research director, manager, professor, and practitioner. Career includes over 30 years of public and private sector experience in environmental science, policy and law, including 25 years leading staff with diverse expertise in government and at leading think tanks serving state and federal policymakers on environmental, energy, and transportation policy.

Full-time Work Experience

Georgetown University Law Center

- **Executive Director, Georgetown State-Federal Climate Resource Center (“Georgetown Climate Center”)** (December 2008 to present)
- **Professor from Practice** (May 2014) to present – Previously “Visiting Professor” (December 2008 to May 2014 – elected to join full-time faculty)
- **Special Advisor to the President** (November 2019 to present)
- **Assistant Dean for Centers & Institutes** (July 2013 to November 2019)
- **Director of Environmental Law Program** (July 2013 to July 2015)
- **Georgetown Environment Initiative Fellow** (May 2013 – May 2014)

Founding director of successful climate center at Georgetown University that focuses on nexus of state and federal climate policy and legal issues related to both adaptation and mitigation. Responsible for oversight of all aspects of Center including hiring and managing staff of attorneys, policy analysts, planners, engineers and students, as well as consultants for highly regarded policy and legal center. Raises and oversees Center’s entire budget of roughly \$3 M/year; fundraising (over \$20 M); oversees all policy and legal analysis, conducts events and outreach; interacts with senior state and federal officials (governors, commissioners, legislators; White House and federal agency officials, etc.), law center and university leadership (President, Executive Vice Presidents, Deans), and news media (national TV, radio, newspapers). Facilitator of high-level dialogues and events on environmental and energy policy among governors; state transport, environment, and energy commissioners (Transportation and Climate Initiative); and local, state, and federal officials regarding climate change adaptation. Facilitates engagement of senior state officials, including governors, at international climate negotiations. Teaches courses including Advanced Environmental Law: Climate Change practicum to law school JD and LLM students, courses in climate change and global health to 1Ls (“Week One”) and courses in environmental lawyering. Appointments to cross-campus Georgetown Environment Initiative Steering Committee, faculty search committees and faculty committees engaging on issues relating to academic standards, interdisciplinary research, energy and sustainability, and development.

As Assistant Dean, oversaw more than a dozen Centers & Institutes with annual budgets totaling roughly \$15 M, and worked to develop and implement strategic vision and meet fundraising objectives – including crafting successful \$1 M grant to launch a Voting Rights Institute with external partners. Represented Centers & Institutes in discussions with university leadership, identifying synergies and pursuing solutions to administrative challenges.

Successfully developed, obtained American Bar Association approval, launched and managed a new master's degree program for both U.S. and international students (Environmental Law LLM) while serving as first Environmental Law Program Director. Oversaw development of a new website and brochure, engaged in faculty and student recruitment and helped raise the profile and reputation of our environmental program which moved up four spots in US News & World Report rankings.

Recent external Board service:

- (1) Chair of the Executive Committee of the Transportation Research Board (term January 2019 - 2020); Vice Chair (2018-2019). TRB is part of the National Academies of Sciences (served on Exec. Committee since 2012), appointed by the Chair of the National Academy of Sciences. The TRB budget 2019 budget was over \$93 M. Also served as Chair of the TRB's Resilience and Sustainability Taskforce of DOT Secretaries and other leading experts; Separate appointments by NAS Chair to serve on a Congressionally-mandated three-year \$5 M study of the future of the interstate highway system and on study regarding reducing emissions from transportation;
- (2) Advisory Board to the National Science Foundation's Geoscience Directorate (2011 to 2017)-Chair, Subcommittee for Atmospheric & Geospace Sciences;
- (3) Board of Trustees to the University Corporation for Atmospheric Research (Governing board of organization made up of 77-Ph.D. granting degree institutions in atmospheric and related sciences), 2012-2015;
- (4) External Advisory Council to the National Center on Atmospheric Research;
- (5) Associate Editor, Climate Policy Journal (current);
- (5) Editorial Board, Georgetown Environmental Law Review (current); former Editor-in-Chief;
- (6) External Advisory Board member, University of California Davis Institute for Transportation Studies (current).
- (7) National Advisory Committee to the Strong, Prosperous, and Resilient Communities Challenge (SPRCC), a partnership (current).

- (8) Center for Strategic & International Studies, Advisory Board to Clean Resilience States Initiative (current).
- (9) Appointed by Gov. Schwarzenegger to the Economic and Allocation Advisory Committee informing the California Air Resource's Board cap-and-trade program.

Pew Center on Global Climate Change (now Center for Climate & Energy Solutions, or C2ES)

- **Vice President, Policy Analysis and General Counsel, 2008**
- **Director of Policy Analysis, 1998 – 2008**

Directed Pew Center's research and policy analysis programs for all aspects of climate change including overseeing all work on science, impacts and adaptation; domestic policy analysis and economics. In addition to overseeing the largest staff and portfolio for the Center, served as sole in-house counsel for several years. The Pew Center was recognized as the top environmental think tank in the world according to Penn's Think Tank and Civil Societies survey. As the lead on all Pew research and policy for over a decade, managed a staff of Ph.D. scientists and economists, policy analysts, lawyers, and academic experts and consultants who performed extensive analysis and published widely on climate change. Served as Pew Center lead on over 100 published reports, briefs, and analysis; author of the Center's "Agenda for Climate Action" and several analyses.

Served as Managing Editor of the book, *Climate Change Science, Strategies, and Solutions*, published by Brill/VSP academic publishers in 2001, overseeing all aspects of content, peer review and design. Represented the Center in discussions with Members of Congress and their staffs, senior government officials in the U.S. and abroad, members of the media, and business leaders – including serving on the Steering Committee of the US Climate Action Partnership (USCAP) which developed a blueprint for comprehensive climate legislation. Presented extensively to domestic and international audiences. Extensively published (Cambridge University Press, UNDP Annual Report, Island Press, *Legal Times*, etc.) and interviewed (e.g., NPR's *Marketplace* and *Science Friday*, *Washington Post*, *LA Times*, *NY Times*, CNN, BBC). Managed an annual budget of roughly \$1 million and responsible for raising another million in funding from sources other than the Pew Trusts which provided core funding.

Adjunct Professor (part-time; while full-time at the Pew Center):

Tulane Law School, New Orleans, LA (Spring 2008);

George Mason University School of Public Policy (graduate school), Arlington, VA (Summer 2006)

Catholic University of America, Washington, DC (undergraduate honors program -- Spring 2005);

Taught environmental and climate courses to undergraduate, graduate, and law schools.

Kilpatrick Stockton law firm (formerly Kilpatrick & Cody), Washington, DC

- Associate, July 1994 – June 1998

Environmental attorney in major law firm. Specialized in client counseling, regulatory work, appellate litigation focused on the Clean Air Act, including EPA rulemaking on particulate matter and other air pollutants and also counseled clients on indoor air pollution. Also assisted clients with Superfund (CERCLA) cases and other environmental compliance matters. Clients included Avis, Interface, the City of Atlanta, Kennecott, and the Indoor Air Association. Pro bono work with Raising Hispanic Academic Achievement on environmental equity projects.

U.S. Environmental Protection Agency, Washington, DC

Office of Research and Development (“ORD”), Science Policy Office

Policy Analyst, September 1993 – May 1994

Represented ORD in development of emerging air pollution standards – reviewed and commented on development of the “criteria documents” for air pollutants.

Louisiana Department of Environmental Quality and Office of Governor Roemer

- Director of Policy Analysis and Planning, November 1988 – August 1991

- Asst. Chief of Staff for Environmental Affairs to Gov. Roemer (1989-90)

Created and supervised new policy analysis and review division with staff of thirteen, including planners, scientists, engineers, policy analysts, and economists. Represented DEQ in testimony before legislative committees, trial judges, industry officials, citizens, and the media. Supervised department- and statewide cross-agency and cross-disciplinary planning efforts (Louisiana Environmental Action Plan – LEAP to 2000) and economic analyses. Developed innovative and award-winning program linking industrial tax breaks to environmental performance. Assisted with drafting and passage of landmark toxics reduction legislation that reduced hazardous air pollutant emissions by 50% over four years. Obtained over one million dollars to fund research and supervised another million in contracts, including awarding the first-ever “environmental equity” research contracts to study disproportionate effects of pollution. Served as Governor’s representative on National Governors’ Association’s global warming task force (1989-90). Served briefly as top environmental advisor to reform governor. Initiated successful NEPA challenge against US EPA over the import and burning of the pesticide, dinoseb.

U.S. Environmental Protection Agency, Washington, D.C.

Office of Air and Radiation, Office of Policy Analysis and Review (OPAR)

- Environmental Protection Specialist, August 1987 – November 1988

(continuing on IPA for a time while in Louisiana DEQ).

Lead policy analyst for air toxics (hazardous air pollutants) in OPAR. Briefed EPA Administrator and Asst. Administrator on pending regulations from air office.

Represented US at international meetings at OECD on hazardous air pollutants.

Coordinated with the water office on drinking water standards for toxics: served on intra-agency review and equity/diversity committees.

- Special Asst. to the Acting Asst. Administrator for Air and Radiation,
March – July 1988 (Rotation from OPAR)

Top nonpolitical advisor to EPA's highest ranking official on air issues. Served as Executive Secretary for Northeast Ozone Transport Group, consisting of Asst. Administrator, three Regional Administrators, and six state environmental secretaries working to address cross-state air pollution.

Education

Georgetown University Law Center, Washington DC

- Juris Doctor, *magna cum laude*, Order of the Coif, May 1994.

Editor-in-Chief, *Georgetown International Environmental Law Review*, 1993-94.

Tulane University School of Law, New Orleans, LA (first year of law school)

Full academic scholarship. Selected for Law Review.

Harvard University, Cambridge MA

- Masters of Public Administration, Kennedy School of Gov't, June 1987.

- Kennedy Fellow (full tuition scholarship)

Awarded the top award in Master's program upon graduation (The Don K. Price award for "academic distinction and commitment to public service.")

Coursework in environmental and planning law (Harvard Law, Harvard School of Design), negotiation (MIT), and public health (Harvard School of Public Health) as well as economics and public finance. Focus: Environmental policy and public health. Involved (independent of coursework) in successful effort to halt dumping of gypsum into Mississippi River.

Emory University, Atlanta GA

- Bachelor of Science, *High Honors* in biology (completed second major in philosophy), May 1985.

- Stipe Scholar for Creativity in Arts and Sciences.

- Rhodes Scholar semifinalist.

Ecology focus: honors thesis on effects of air pollution on Appalachian forests.

Helped develop environmental studies minor. Reviewed abstracts for Ecology

Society of America annual symposium as Research Assistant to Donald Shure.

Member of leadership honor society (ODK) and Society for Collegiate Journalists.

Named one of *Glamour* magazine's Top Ten College Women of 1985.

Other Experience (while in school)

Beveridge and Diamond, Washington D.C.

Summer Associate, May – August 1992, Law Clerk, Sept 1992- May 1993

Assisted in preparation of articles, briefs, and letters to clients on Clean Air Act regulatory developments. Handled two pro bono employment discrimination cases.

Paul Hastings and Kilpatrick and Cody, both in Washington D.C.

Summer Associate, Summer 1993 (split summer between two firms working on environmental matters.

(Offered Associate positions at all firms I clerked with upon graduation).

National Institute for Chemical Studies, Charleston WV

Researcher/Consultant, June 1986- May 1987

Charleston, WV

Documented exposures from air emissions in the Kanawha (“chemical”) Valley near sister plant to Bhopal’s Union Carbide facility. Organized national risk management and communication conference. Developed and demonstrated dispute resolution exercise, published by Harvard’s Negotiation Project and coauthored by Larry Susskind of MIT.

Office of Conservation and Planning, City of Braintree, MA

Town Open Space Planner, January – May 1986

Principal author of town’s Open Space and Recreation Plan. Revised land-use policies. Acquired land for conservation. Reviewed development plans.

National Audubon Society, Capitol Hill Office, Washington, D.C.

Intern, Summer 1983

Monitored Congressional action and proposed amendments to Clean Water Act.

Steimle and Associates Environmental Engineers, Kenner, LA

Environmental Field Technician, 1982- 1983.

Conducted water quality sampling and analysis; monitored oil spill clean-up in the Gulf of Mexico and drafted reports for environmental engineering firm.

Harvard University,

Teaching Fellow for Rob Reich’s political management course.

Additional Activities & Honors

- Biden-Harris Policy Committee and GOTV volunteer
- Elected to the American College of Environmental Lawyers (Summer 2018).
- Chair of external review committee to evaluate Duke’s multidisciplinary Nicholas Institute for Environmental Policy Solutions (Fall 2013), appointed by Duke University Provost to conduct independent analysis and draft report;
- Named one of PODER Hispanic Magazine’s Green 100 and featured in Earth Day issue (April 2013);
- See current Board service under current position at Georgetown: includes National Science Foundation, National Transportation Research Board (NAS), UCAR Board of Trustee and NCAR Advisory Board.
- Served as reviewer for portions of the World Energy Assessment (2012).

- Appointed by Gov. Schwarzenegger to serve on California's Economic and Allocation Advisory Committee regarding AB32. (2009-10).
- Served as peer reviewer for New York City's climate adaptation report (2018 and 2011).
- Served on US Climate Action Partnership (USCAP) Steering Committee (2007-2008), contributing to background paper and blueprint documents that informed design of climate legislation, the American Clean Energy and Security Act. Assisted Lieberman and McCain's staff in drafting previous cap-and-trade bills.
- Served on Federal Advisory Committee/expert panel that produced report: Impacts of Climate Variability and Change on Transportation Systems and Infrastructure – the Gulf Coast I Study (2008).
- Served as peer reviewer on the Energy and Information Administration's panel reviewing economic analyses of climate bills (2003 analysis of the Climate Stewardship Act).
- Best Actress, Into the Woods, Chalice Theater (2004); performed in 20th Anniversary Theater reunion (2016).
- Served on Emory University's Alumni Board of Governors (1996 – 2000) and President of the Washington, D.C. alumni club (late 80's and mid-90s).
- Served on three-person external review committee for the Board of the Center for International Environmental Law and Policy to evaluate leadership and make recommendations (1996-97).
- Led (pro bono) summer environmental program for Hispanic youth as a volunteer/mentor with Raising Hispanic Academic Achievement and tutored students in math and science, 1994 – 96. Successful in obtaining EPA "environmental equity" grant to support environmental project that changed many lives by opening the doors to careers in science to young Latinos.
- Harvard/Stanford delegation to Berlin (1986).
- Harvard Honduras Project – worked with fellow grad students to design and built homes/water treatment system (1986).
- Top Ten College Women, Glamour Magazine (1985); Emory College Council (student government) Vice President; lead singer in Emory Jazz Ensemble; Managing Editor of Phoenix (magazine), Senior Society (one of seven seniors each year selected for leadership and community service); Resident Advisor and Director (dorm manager); staff of Emory Wheel (newspaper); Miss Atlanta Dogwood Festival 1984.
- Served on a select national student advisory panel to US College Board (which oversees SAT tests) (1982-85).

Selected Publications

For 12 years, I have overseen, authored, and edited numerous reports, briefs, analyses and databases published by the Georgetown Climate Center:

www.GeorgetownClimate.org; www.AdaptationClearinghouse.org

In addition, I have authored or coauthored these and other external publications:

Climate 21 Project, *Transportation Chapter* lead author (November 2020).

Zero Carbon Action Plan, United Nations Sustainable Development Solutions Network, Consortium co-chair and lead author with Dan Sperling & Lew Fulton, *Accelerating Deep Decarbonization in the US Transportation Sector* (October 2020).

Edith Brown Weiss & Vicki Arroyo, *Addressing Climate Change from the Bottom-Up in a Kaleidoscopic World*, LA REVUE DES JURISTES DE SCIENCES PO, (January 2020).

Vicki Arroyo, *Critical Issues in Transportation Resilience 2019: Climate Change Resilience*, Transportation Research News Magazine (November/December 2019).

Vicki Arroyo, *Keynote Address: A Brief History of U.S. Climate Policy and a Call to Action*, 34 MD. J. INT'L L. 1-19 (2019).

Vicki Arroyo, *From Paris to Pittsburgh: U.S. State and Local Leadership in an Era of Trump*, 31 Geo. Envtl. L. Rev. (Spring 2019).

Testimony before full House Transportation and Infrastructure Committee (March 2019) and the Senate Environment and Public Works Committee (July 2019).

Climate Change, Sustainable Development and Ecosystems – 2018 Year in Review, Contributing author, American Bar Association.

Ready for Tomorrow: Seven Strategies for Climate-Resilient Infrastructure, Contributing author, Hoover Institute of Stanford University (Spring 2019).

Vicki Arroyo, *The global climate action summit: increasing ambition during turbulent times*, Climate Policy, 18:9 (September 2018).

Renewing the National Commitment to the Interstate Highway System: A Foundation for the Future, National Academies of Sciences' Transportation Research Board report to Congress, Contributing author and Committee Member (December 2018).

Recommendations to the TRB by the Resilience and Sustainability Task Force (Chair, June 2018).

Critical Issues in Transportation, TRB of National Academies of Sciences, Contributor, (January 2019).

Building Gulf Coast Resilience, Opportunities after Deepwater Horizon, Coauthor, Georgetown Climate Center report with support of Walton Foundation (Fall 2018)/

Arroyo, Vicki, *Climate Change, Sustainable Development and Ecosystems – 2017 Year in Review*, contributing author, American Bar Association (April 2018).

Arroyo, Vicki, *State and Local Climate Leadership in the Trumpocene*, CARBON & CLIMATE LAW REVIEW, SPECIAL EDITION: THE CHANGING PROSPECTS FOR CLIMATE LAW AND POLICY IN THE US (LeRoy Paddock, editor) (October 2017).

Arroyo, Vicki, Kathryn Zyla and Gabriel Pacyniak, *New Strategies for Reducing Transportation Emissions and Preparing for Climate Impacts*, FORDHAM URBAN LAW JOURNAL (October 2017).

Arroyo, Vicki, Contributing author, *Climate Change, Sustainable Development and Ecosystems – 2016 Year in Review*, American Bar Association (March 2017).

Arroyo, Vicki, *The US is the biggest loser on the planet thanks to Trump's calamitous act*, THE GUARDIAN, (Sunday, June 3, 2017).

Arroyo V. et al, "State Innovation on Climate Change: Reducing Emissions from Key Sectors while Preparing for a "New Normal," *Harvard Law and Policy Review*, (Summer 2016).

Arroyo, Vicki, *The Coming Refugee Crisis: When Home Leaves Us*, THE GUARDIAN (May 2016).

Arroyo, Vicki, Contributing author, *Climate Change, Sustainable Development, and Ecosystems - 2015 Year in Review*, American Bar Association (April 2016).

Arroyo V. and Kathryn Zyla, "Transportation Policy," chapter in *Climate Change and Public Health*, Oxford University Press, Spring 2015.

Arroyo, V. "Promoting Adaptation Through Policy," in *The State of Adaptation in the U.S.*, commissioned and published by the MacArthur Foundation (April 2013).

Arroyo V. and Terri Cruce, "State and Local Adaptation to Climate Change," in ABA book, The Law of Adaptation to Climate Change, (Michael Gerrard & Katrina Kuh, eds., 2012).

Arroyo. V. "Are there winning strategies for enacting climate policy?" *Climate Policy*, August 2012.

Arroyo, V. "Preparing for Future Disasters in the Wake of Sandy." Huffington Post, Nov. 2012.

Thomson V. and V Arroyo, "Upside-down Cooperative Federalism: Climate Change Policymaking and the States." *Virginia Environmental Law Journal*, 2011.

Contributing author and committee member, "Policy Options for Reducing Energy Use and Greenhouse Gas Emissions from U.S. Transportation," report of National Transportation Research Board (of NAS), June 2011.

Arroyo, V. "Regional Action: A U.S. Perspective," in *Regional and State Policies for Economic Competitiveness and Mitigation*, Heinrich Boll Foundation Transatlantic Dialogue (fall 2011).

Claussen E, V Arroyo and T. Semans. "Policies to Stimulate Corporate Action," in Climate Change Science and Policy, Island Press, 2010.

Contributing author, *Allocating Emissions Allowances Under a California Cap-and-Trade Program*, Report of Economic and Allocation Advisory Committee, 2010.

Arroyo V, "US Climate Policy," in Cerdá, E. and Labandeira, X. (eds) Climate Change Policies. Global Challenges and Future Prospects, Edward Elgar, Cheltenham (UK), 2010.

Principal author of Congressional briefing series of several white papers on design of cap and trade, technology, and tax policies (2008), sponsored by the Doris Duke Charitable Foundation.

Arroyo V. and B. Preston. "Change in the Marketplace," in Creating a Climate for Change: Communicating Climate Change, Cambridge University Press, 2007.

Arroyo V. and P. Linquiti. "Current Directions in the U.S. Climate Change Debate: Prospects for a Post-2012 World," UN Development Report 2007.

Arroyo, V. "Climate Policy Should Focus on Reducing Emissions," in *Environmental Forum*, ELI, 2007.

Principal author of *The Agenda for Climate Action* (precursor to US Climate Action Partnership) published by the Pew Center, 2006;

Arroyo V. and K. Zyla. "Advancing an Agenda for Climate Action," in *Bridges*, 2006.

T. Semans and V. Arroyo, "An Agenda for Climate Action," in *Petroleum Energy Economist*, 2006.

Author of Pew Center's analysis on Bush Administration's "Intensity Target."

Arroyo, V., Contributor to Encyclopedia of Science, Technology, and Ethics, 2004.

Arroyo V. and N. Strachan, “Addressing the Costs of Climate Change Mitigation,” *Climate Change Policy Dialogue*, Aspen Institute, 2004.

Arroyo V. and N. Pena. “Establishing a Domestic Greenhouse Gas Reduction Target,” *Climate Change Policy Dialogue*, Aspen Institute, 2004.

Managing Editor, Pew Center’s book: Climate Change: Science, Strategies, and Solutions, Brill, 2001.

Arroyo V. and M. Roy, “Climate Change Legislation in the U.S.” (chapter in above book), 2001.

Lee, H., V. Arroyo and M. Roy, “US Domestic Climate Policy,” *Climate Policy*, 2001.

Conceptualized and oversaw substance, writing, editing, and peer review of all Pew Center reports, briefs, and analyses (over 100) on domestic policy, science and impacts of climate change, economics, law, and adaptation for over ten years: 1998 – 2008: <http://www.c2es.org/about/history> -
For this research, the Pew Center was named the leading environmental think tank in the world.

Arroyo V., Indoor Air Quality, Interiors, 1996.

Blase K. and V Arroyo, “EPA’s Particulate Matter Standards,” Legal Times. 1995.

Arroyo, V. “Waste Wars: The Fight Over Hazardous Waste Importation,” Georgetown International Environmental Law Review, 1993.

Arroyo V. and L. Susskind, “Jefferson Hazardous Waste Negotiation Game,” Harvard Negotiation Project, 1987.

Presentations

Speaker at numerous conferences and meetings including: **major legal, scientific, and policy associations** – AAAS, NCSE, American Constitution Society, AALS (several times), ABA (several times), ALI-ABA (several times), Environmental Law Institute (monthly calls to update members on state and local environmental law developments), NAELS (environmental law society conference), NARUC (utility regulators); **major dialogues** – Aspen Institute, Washington Ideas Festival, Chicago Ideas Week, New Republic Forum, Chicago Council on Global Affairs, events sponsored by **foreign governments** (UK, France, Germany, Australia, Canada, Spain, EU, Latvia, Chile, China) and leading **think tanks** (Brookings, New America Foundation, German Marshall Fund, Resources for the Future, Urban

Institute, Heinrich Boll Foundation, Joint Center for Political and Economic Studies, IGES in Japan, IFRI in Paris, CSIS, WRI), **funders' networks** (environmental grantmakers, climate, transportation, biodiversity funders) and **boards of major foundations** (Kresge Foundation, Rockefeller Brothers Fund, Tremaine Foundation, John Merck Fund), major **NGO boards** (WWF – invited by Chair, Bruce Babbitt, Trout Unlimited – invited by Chair, Teddy Roosevelt IV, Institute for Sustainable Communities), keynotes and panel presentations at several **other universities and law schools**: University of Michigan Law, Emory Law, UNC Law, UVA, Duke, Fordham Law, University of Maryland Law (and policy school), Vanderbilt Law (and engineering), MIT, North Carolina State, University of South Carolina Law, University of Arizona, Tulane Law, Vermont Law School, Deusto (Spain), Tsinghua University (China); New School; Rutgers; Virginia Tech; Johns Hopkins.

A sample of keynotes and other major presentations include:

TED Global speaker on adaptation to climate change, Edinburgh, Scotland (posted online September 30, 2012 – over 1 million views); Chair's Luncheon, Transportation Research Board Annual Meeting (January 2020); Voorhees Distinguished Lecture, Rutgers University (December 2019); Maury Strauss Distinguished Public Lecture, Virginia Tech (November 2019); Senate Environment and Public Works Committee testimony (July 2019); University of Maryland Center for Environmental Science Commencement address (May 2019); Canadian Embassy, Washington DC (March 2019); Climate Leadership Conference, Baltimore (March 2019); Women Peace and Security Symposium (March 2019); Coastal Retreat Workshop (March 2019); House of Representatives Transportation and Infrastructure Committee testimony (February 2019); American Association for the Advancement of Sciences (February 2019); Transportation Research Board Annual Meeting (January 2019); Pew Trusts (January 2018); American Geophysical Union Conference (December 2018); American Bar Association Section on Environment and Energy Annual Meeting, San Diego (October 2018); Resilience Innovation Summit and Exchange, Denver (October 2018); Global Climate Action Summit, California (September 2018); University of Maryland School of Law keynote (September 2018); New England Governors/Eastern Canadian Premiers meeting, Vermont (August 2018); GLOBE Forum, Vancouver, BC (March 2018); US Climate Center and other venues during international climate talks, Bonn, Germany (November 2017); Society for Environmental Journalists, Pittsburgh (October 2017); Inter-American Development Bank, Washington, DC (April 2016); Congreso del Futuro, Santiago Chile (January 2016); Organized and facilitated equity-focused convening on climate adaptation, Baltimore (April 2016); European “road show” to discuss Risk and Resilience (June 2016 in Brussels, Berlin and Riga); Inaugural International TRB Meeting on Adaptation and Resilience (DC September 2015); U.S. Department of Transportation keynote integrating adaptation and resilience (October 2015); National Adaptation Forum, St. Louis – organized and led equity-focused discussion of adaptation (April 2015); Science Gallery, “Strange Weather” exhibition keynote, Trinity College Ireland (October 2014); Mayors' Innovation Project – to U.S. mayors regarding our adaptation tools and clearinghouse (January 2013); National Transportation Research Board Annual

Meeting, D.C., regarding overcoming regulatory obstacles to electric vehicle deployment (January 2013); Big Data Symposium, Georgetown Law, regarding use of data in climate policy (January 2013); Building Resilience Conference, New Orleans – keynote focusing on Decisionmaking Under Uncertainty (March 2013); D.C. Council of Governments – testified before elected officials from area jurisdictions regarding preparing for climate change (March 2013); Union of Concerned Scientists, on resilience and tools to adapt (March 2013); New Jersey Adaptation Alliance, Rutgers University – keynote on Coping with a Changing Climate (May 2013); Consultative Group on Biodiversity annual meeting of major funders (June 2014), Maryland Climate Summit keynote (July 2013); Conference of New England Governors and Eastern Canadian Premiers – presented to six U.S. governors and five premiers in Quebec on vehicle electrification (September 2013); Chicago Ideas Week (October 2013) on preparing for climate change; Boston Ideas Lab/WGBH – (November 2013) on resilience; Council of State Government – U.S. state legislators’ meeting, Princeton, NJ (May 2018) and Puerto Rico (December 2013) on preparing for extreme weather and improving related state and federal policies; Pop Tech on personal and community resilience (Oct. 2012).

Media Appearances

Interviews/quotes/op eds have appeared in several major media outlets: NBC Nightly News, New York Times, Washington Post, Los Angeles Times, CNN (news, Anderson Cooper), NPR (Marketplace, Science Friday, On Point, Diane Rehm, Morning Edition, etc.), BBC, Al Jazeera, Politico, Congressional Quarterly, Newsweek, The Journal *Democracy*, Washington Lawyer, New Orleans *Times Picayune*, Huffington Post, Grist, Voice of America, the Guardian, and many more, including:

Bloomberg, What should Joe Biden do first on climate change? (November 2020)
<https://www.bloomberg.com/features/2020-biden-climate-change-advice/>

The Hill, Environmentalists sound alarm over Barrett’s climate change comments (October 2020) <https://thehill.com/policy/energy-environment/521282-environmentalists-sound-alarm-barrett-comments-climate-change>

New York Times, One thing you can do: make smart donations (January 2020)
<https://www.nytimes.com/2020/01/29/climate/nyt-climate-newsletter-donations.html>

Washington Post, Group of States and District Draft Pact to Reduce Emissions (December 24, 2019)
https://www.washingtonpost.com/local/trafficandcommuting/group-of-states-and-the-district-draft-pact-to-cut-emissions-from-cars-and-trucks/2019/12/24/de1490da-2257-11ea-a153-dce4b94e4249_story.html

Inside Climate News, States Vowed to Uphold Climate Pledge: Are They Succeeding? <https://insideclimatenews.org/news/24122019/states-paris-climate-pledge-100-percent-renewable-energy-lawsuits-trump-california> (Dec. 2019)

New Orleans Times Picayune, How Buddy Roemer became a rare champion of environmental protection
https://www.nola.com/news/environment/article_2eaa4b58-21e9-11ea-b022-13b575d2cdc2.html (December 2019).

JD Supra, *Someone Left the Cake Out in the Rain: The Dissolution of Cooperative Federalism in the Trump Era*, <https://www.jdsupra.com/legalnews/someone-left-the-cake-out-in-the-rain-39747/>

Scientific American and E&E News, Trump Touts Infrastructure in State of the Union; Ignores Climate Change. <https://www.scientificamerican.com/article/trump-touts-infrastructure-in-state-of-the-union-ignores-climate-change/> (February 6, 2019)

The New York Times, A ‘Green New Deal’ Is Far From Reality, but Climate Action Is Picking Up in the States.
<https://www.nytimes.com/2019/02/08/climate/states-global-warming.html> (February 8, 2019)

Los Angeles Times, Democratic Wins in 11 States Lead to a Wave of Clean Energy Legislation, <https://www.latimes.com/nation/la-na-clean-energy-states-20190427-story.html> (April 27, 2019)

New York Times, How Big a Deal is Trump’s Fuel Economy Rollback?
<https://www.nytimes.com/2018/08/03/climate/trump-climate-emissions-rollback.html>, August 3, 2018

Washington Post, Trump Withdrew from the Paris Climate Deal a Year Ago. Here’s What has Changed, https://www.washingtonpost.com/news/energy-environment/wp/2018/06/01/trump-withdrew-from-the-paris-climate-plan-a-year-ago-heres-what-has-changed/?utm_term=.c48df252c7e3, June 1, 2018

Arroyo, Vicki, The US is the biggest loser on the planet thanks to Trump’s calamitous act, The Guardian, Sunday, June 3, 2017
<https://www.theguardian.com/commentisfree/2017/jun/03/us-biggest-loser-trump-calamitous-act-paris-climate-agreement>

New York Times, Think Beyond Homes and Roads to Prepare for Climate Change, Oct. 28, 2015 <http://www.nytimes.com/roomfordebate/2015/10/28/three-years-after-sandy-are-coastal-communities-safer/think-beyond-homes-and-roads-to-better-prepare-for-climate-change> [Invited to write column in “Room for Debate”]

Arroyo, Vicki, Lessons Learned from Rebuilding my Hometown, Huffington Post, August 27, 2015 http://www.huffingtonpost.com/vicki-arroyo/lesson-learned-from-rebuilding-new-orleans-consider-our-changing-climate_b_8051028.html

Washington Post, Forget Bans on Talking About Climate Change, These Florida Republicans are Too Busy Protecting Their Coasts,
<https://www.washingtonpost.com/news/energy-environment/wp/2015/03/31/the-unlikely-group-of-republicans-who-are-preparing-florida-for-climate-change/>
March 2015.

DORIEN PAUL BLYTHERS

(b) (6)

Dynamic political operative with 10+ years of experience in electoral and issue campaigns. Effective communicator with proven success in managing high-profile stakeholder relationships and partnerships. Acute awareness of imperative objectives in high-pressure environments.

PROFESSIONAL EXPERIENCE

February 2020 – Present National Political Director

End Citizens United & Let America Vote
Washington, DC

- Spearheaded national endorsement strategy and process for the 2020 election cycle –composed of 213 federal endorsements
- Advised Vice President & CEO on ~\$8M of direct coordinated campaign investments to priority campaigns and partners
- Manage and coach a team of four full-time mid-level and junior political staffers to exceed programmatic goals
- Facilitate and staff regular strategy meetings and check-ins with incumbent members of Congress and organization CEO
- Convene regular table meetings with national progressive PAC political directors and stakeholders on shared priorities

January 2019 – December 2019 Midwest-Northeast Political Director

Kamala Harris For The People
Baltimore, MD

- Managed candidate's political call time strategy and outreach priorities pre and post presidential campaign announcement
- Maintained federal and state and local relationships on behalf of the candidate with an emphasis on the Midwest and Northeast regions
- Spearheaded development of 5 State Leadership Committees to support ballot access and delegate slating process
- Traveled with candidate for the first 6 months of campaign as staff advisor, directing daily operations and key engagement objectives
- Developed national constituency engagement framework and African-American engagement plan

October 2018 – January 2019 Political Strategist

Fearless For The People PAC / Kamala Harris for Senate
Washington, DC

- Partnered with state parties, endorsed candidate committees, and finance consultants to support 2018 midterm campaign swing
- Staffed candidate at political, field, and finance events in 6 key battleground states, with an emphasis on African-American outreach
- Worked with internal stakeholders to approve political briefings, call sheets, state policy memos, and supporting logistics memos
- Managed candidate's political call time, national endorsement strategy, and relevant tracking systems – including NGP VAN

May 2017 – September 2018 Public Engagement Program Manager

Climate Action Campaign
Washington, DC

- Served as the chief relationship manager with external partners for African American, Faith, and Millennial constituencies
- Led public engagement task force for the coordinated campaign to remove former EPA Administrator Scott Pruitt from office
- Developed funding strategy and execution for approximately \$400k in external regrants
- Managed multicultural media and public affairs consultants tasked with executing earned and paid media strategies
- Delivered weekly report to progressive coalition table, co-chaired by Center for American Progress and The Leadership Conference

August 2016 – November 2016 Deputy Director of Principal & Surrogate Engagement

Hillary for America – Florida
Tampa, FL | Miami, FL

- Drafted proposals and campaign event briefings Democratic Nominee for President, Hillary Rodham Clinton
- Developed pre-program line-ups, ROS, staffing plans, and organizing plans for all major principal travel in the state
- Worked with internal and external political and constituency group stakeholders to build for major campaign events, often +10K bodies
- Ensured State Director's priorities were met by serving as the primary Advance point-of-contact for major principal visits

May 2016 – July 2016 Associate Manager of Constituency & Allied Groups

Democratic National Convention Committee
Philadelphia, PA

- Worked with Deputy CEOs & Director of Credentials to develop & implement plan that achieved imperative convention objectives
- Developed and managed all aspects of the convention's constituency and allied group credentialing process
- Worked with the Office of Public Engagement in the planning, drafting, and dissemination of communication with democratic partners
- Provided paramount training, staffing, and management in general and VIP credential distribution centers

DORIEN PAUL BLYTHERS

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December 2015 – 2017

Consultant

Self-Employed, Independent Contractor

Washington, DC | New York, NY

- Developed and executed PR strategy and earned media plan for Partpic Inc. CEO, Jewel Burks – now acquired by Amazon
- Provided planning and program support for The Potomac Coalition's Annual Private Policy Retreat in Wilmington, DE
- Led strategic operations & logistics for The Magyar Foundation's international scholars delegation scholars and civic leaders US swing

August 2015 – November 2015

Campaign Scheduling and Operations

Kamala Harris for Senate

Los Angeles, CA

- Processed all internal and external scheduling meeting requests for the Senate campaign
- Served as primary coordinator and liaison for the campaign to CA-DOJ scheduling and advance teams
- Drafted policy and procedures document for campaign travel and accommodations
- Led onboarding for 18 part-time and full-time HQ interns including retention, workflow, & professional development

August 2014 – August 2015

Outreach Associate

Transportation for America

Washington, DC

- Drafted all prospective grant inquiries, proposals, and reports as the organization's chief grant manager
- Coordinated the release of 6 statewide pedestrian fatality reports with local partners in CA, OR, GA, TN, MI & PA
- Managed two external database research and design consultants on release of statewide fatality reports
- Gained bi-partisan support at local & state levels for S.2891, the Innovation in Surface Transportation Act

May 2014 – August 2014 (contract)

International Day of Service Capacity Organizer

U.S. Green Building Council

Washington, DC

- Managed relationships with 21 local chapters/ affiliates for the Pacific Region & Mid-Atlantic Corridor Region
- Developed national outreach field plan and quarterly benchmark strategy
- Developed alternative online resources to support the global service day registration process

October 2013- May 2014

Deputy Finance Director

Warren Christopher for Congress

Prince George's County, MD

- Identified and conducted research on potential campaign contributors to expand candidate's donor base
- Worked with donors to oversee the detailed planning, execution, and follow-up of all fundraising events
- Managed all pledges to give and raise funds using NGP Finance Software

March 2012- November 2012

Field Organizer

Obama for America - Florida

Palm Beach County, FL

- Managed an organization of +150 volunteers in the Greater Palm Beach County Community
- Provided training and management support to 8 Summer and Fall Barack Obama Organizing Fellows
- Maintained relationships with local elected officials in northern Palm Beach County on behalf of Obama for America
- Managed and organized volunteers at 8 campaign surrogate events including two presidential grassroots events

SKILLS PROFILE

Professional Skills

On-Air Media Trained
Advance, Scheduling and Logistics
Finance Program Management
Grant Writing & Management
Speech Writing
Campaign Budgeting and Planning

Computer/ Digital Platform Skills

Social Media Content Development
NGP – VAN & Votebuilder
Snapchat, Twitter, Facebook, and Instagram
Salesforce & Quickbase
Google Software (Sheets, Forms, Docs)
Hustle & Megaphone SMS

EDUCATION

College of Arts and Sciences

Major: Political Science, Minor: Community Development

Howard University

Washington, DC

TOMÁS ELÍAS CARBONELL

(b) (6)

PROFESSIONAL EXPERIENCE

Environmental Defense Fund, Washington, DC (July 2012 – Present)

- Positions held:
 - Senior Counsel and Director of Regulatory Policy (2020 – Present);
 - Director of Regulatory Policy and Lead Attorney (2016-2020);
 - Director of Regulatory Policy and Senior Attorney (2015-2016);
 - Senior Attorney (2014-2015);
 - Attorney (2012-2014)
- Provide legal counsel and manage work of EDF attorneys, staff, and consultants in regulatory proceedings, policy advocacy, civil and appellate litigation, and legislative advocacy relating to federal climate and clean air regulation.
- Report to EDF's General Counsel and have direct supervisory responsibilities for a team of attorneys and policy experts focused on regulations for the power sector and industrial sources, policies affecting agency use of science and economics, and other issues.
- Lead EDF's legal and regulatory advocacy related to the Clean Power Plan and carbon pollution standards for new, modified, and reconstructed power plants, including EDF's defense of these standards in regulatory proceedings and in federal appellate litigation
- Lead EDF's litigation and regulatory advocacy on recent EPA actions weakening protections against industrial hazardous air pollution
- Oversee litigation and regulatory advocacy relating to defense of science at EPA
- Provide legal counsel on climate legislation and legislative proposals affecting federal climate and clean air laws and regulations
- Oversee development of blog posts, white papers, fact sheets, press releases and other public-facing EDF materials relating to climate and clean air issues
- Represent EDF in engagement with federal officials and Hill offices on legal and regulatory matters; in panel discussions and other public events; and in press interviews
- Communicate with donors, EDF advisory committees, and a broad variety of stakeholders to advance and support EDF's legal and regulatory advocacy on climate and clean air issues

Associate, Van Ness Feldman, P.C., Washington, DC (September 2008 – July 2012)

- Counseled clients in the electric power, natural gas pipeline, and energy efficiency industries on federal legal and regulatory matters related to climate change, clean energy/energy efficiency, environmental, and electricity regulation.
- Prepared two public-facing legal analyses on existing legal authorities to promote energy efficiency and green building practices;
- Prepared comments on rulemakings related to greenhouse gas regulation of stationary sources, renewable fuel standards, GHG reporting, and other Clean Air Act programs;
- Advised clients on pending climate change and clean energy bills;
- Advised clients on compliance with Clean Air Act and Federal Power Act requirements.

OTHER PROFESSIONAL ACTIVITIES

- *Member, U.S. Environmental Protection Agency Clean Air Act Advisory Committee* (Jan. 2017-present).
- *Adjunct Instructor, Howard University School of Law* (Aug. 2020 – present). Co-led a weekly general environmental law seminar for environmental externship students in fall 2020.

EDUCATION

YALE LAW SCHOOL, J.D., June 2008

- Environmental Law Clinic, Spring 2006, Fall 2007
- Board member, Yale Environmental Law Association, Fall 2006-Spring 2008
- Research Assistant, Prof. Michael Graetz, Fall 2007

UNIVERSITY OF OXFORD

- M.Sc., Environmental Change and Management, with distinction, August 2005;
- M.Sc., Economics for Development, July 2004

NORTH CAROLINA STATE UNIVERSITY

- B.S., Chemical Engineering, B.A., Multidisciplinary Studies, B.S., Economics, *summa cum laude*, December 2002

BAR ADMISSIONS

- North Carolina State Bar (2008)
- District of Columbia Bar (2009)
- United States Court of Appeals for the District of Columbia Circuit (2012)
- United States Court of Claims (2010)

PUBLICATIONS

1. Tomás Carbonell & Liana James, *The Trump Administration's Unlawful Proposal to Undermine New Source Review Protections*, EM (Aug. 2019)
2. Tomás Carbonell, Rama Zakaria & Surbhi Sarang, *Pruitt's New Air Toxics Loophole: An Assessment of Potential Air Pollution Impacts in the Houston-Galveston Region* (EDF White Paper, Apr. 2018).
3. Tomás Carbonell & Peter Zalzal, *A Crisis of Leadership: the Urgent Need to Restore EPA's Mission and Values*, EM (Sept. 2017)
4. Tomás Carbonell, *The Clean Power Plan and methane standards for the oil and natural gas sector: progress in protecting climate and public health under existing law*, 12 ENVIRONMENT, HEALTH AND SAFETY LAW NEWS 1:31 (Aug. 2016)
5. Tomás Carbonell, *EPA's Proposed Clean Power Plan: Protecting Climate and Public Health by Reducing Carbon Pollution From the U.S. Power Sector*, 33 YALE L. & POL'Y REV. 403 (2015).
6. Tomás Carbonell & Peter Zalzal, *Streamlined State and Federal Planning Approaches Under the Clean Power Plan* (EDF White Paper, June 2015)
7. Megan Ceronsky & Tomás Carbonell, *Section 111(d) and the Clean Power Plan: the Legal Foundation for Strong, Flexible & Cost-Effective Carbon Pollution Standards for*

Existing Power Plants, 44 ENV. L. REP. 11086 (Dec. 2014)

8. Tomás Carbonell, Shelley Fidler, & Doug Smith, *Better Buildings Through Executive Action* (U.S. Green Building Council, 2012)
9. Kyle Danish, Tomás Carbonell, & Kevin Gallagher, *Global Climate Change and the Clean Air Act*, in THE CLEAN AIR ACT HANDBOOK (3d ed., American Bar Association, 2011)
10. Kyle Danish & Tomás Carbonell, *EPA Lays Further Groundwork for Permitting of Greenhouse Gas Sources Under the Prevention of Significant Deterioration Program*, THE ENVIRONMENTAL COUNSELOR No. 267, Nov. 2010.
11. Tomás Carbonell, Shelley Fidler, & Douglas Smith, *Using Executive Authority to Achieve Greener Buildings* (U.S. Green Building Council, 2010)
12. Kyle Danish & Tomás Carbonell, *Second-best world*, TRADING CARBON (May 2010)
13. Clarke Bruno, Tomás Carbonell, A. Anna Capelle, Walter R. Hall, Caryn F. Lai, Les Lo Baugh, & Zachary Seder, *Report of the Climate Change & Emissions Committee*, 30 ENERGY LAW JOURNAL 563 (2009)
14. Tomás Carbonell, *Getting Ahead: New Opportunities in Clean Energy* (Institute for Emerging Issues Working Paper, 2008).
15. James Harmon, Crescencia Maurer, Jon Sohn & Tomás Carbonell, *Diverging Paths: What Future for Export Credit Agencies in Development Finance?* (World Resources Institute, 2005).
16. Bruce Rich and Tomás Carbonell, *Public Participation and Transparency at Official Export Credit Agencies*, in THE NEW “PUBLIC”: THE GLOBALIZATION OF PUBLIC PARTICIPATION 175 (Carl Bruch, ed, Environmental Law Institute, 2002).

SPEAKING ENGAGEMENTS:

1. National Black Environmental Justice Network, Leadership Forum Webinar Series (Dec. 21, 2020)
2. Cal. Bar Ass’n, 2020 Environmental Law Conference at Yosemite, *Two Roads Diverging: A Look at Federal Air and Climate Regulation in 2021* (Oct. 16, 2020)
3. N.C. State University Center for Leadership and Civic Engagement, Active Citizenry Series, *The Role of Interest Groups, NGOs, Lobbyists and PACs in Government* (Jan. 27, 2020) (panel discussion / workshop for N.C. State students and general public)
4. National Association of Regulatory Utility Commissioners 2018 Annual Meeting, General Session (Nov. 14, 2018) (Panel discussion on EPA’s proposed rollback of the Clean Power Plan)
5. California Bar Association, 2017 Environmental Law Conference at Yosemite, *U.S. Climate Regulation at a Crossroads* (Oct. 22, 2017) (Panel discussion)
6. Environmental Law Institute, 25th Eastern Boot Camp on Environmental Law, *Climate Change Law* (Nov. 2, 2016) (90-minute instructional seminar)
7. National Governors’ Association, State Policy Forum on Responsible Shale Energy Development, *Best Practices to Reduce Air Emissions From Production and Distribution* (Oct. 18, 2016) (panel discussion)
8. Louisiana State Bar Association Public Utility Section Annual Meeting, *Section III(d) of the Clean Air Act* (Dec. 17, 2015) (Panel discussion)
9. Tulane Energy and Environmental Law Summit, *The Climate Change Case* (Feb. 27, 2015) (Panel discussion)
10. Nicholas Institute, *Designing Carbon Dioxide Regulation for Existing Power Plants* (Sept. 13, 2013) (Panel discussion)

11. International Energy Program Evaluation Conference, *Leveraging Demand-Side Energy Efficiency in EPA's Carbon Pollution Standards* (Aug. 14, 2013)

HONORS & AWARDS:

- Paul & Daisy Soros Fellow (2006)
- Marshall Scholar (2003)
- Truman Scholar (2002)
- Park Scholar (1998)

Tim Carroll

(b) (6)

Experience

Coalitions Communications Director, 59th Presidential Inaugural Committee Dec. 2020 – Jan. 2021

Managed communications and media strategy for coalitions media, including faith, AAPI, Tribal, LGBT and other specialty outlets. Fielded inquiries, proactively pitched stories and planned rollouts for inaugural events.

Deputy Coalitions Communications Director, Biden for President September 2020 – November 2020

Worked with the Biden campaign's coalitions department to manage communications and media strategy for nearly 20 coalitions including faith, rural, AAPI, Tribal, Jewish, Muslim Americans, young Americans and other outreach teams. Worked with international, national and constituency media outlets, managing inquiries, placing stories and coordinating rollouts to drive the campaign's messaging.

Press Secretary, 2020 Democratic National Convention July 2020 – September 2020

Spokesperson for the 2020 Democratic National Convention. Managed local, national and international media requests and communications rollouts as plans shifted due to COVID-19.

National Director of Press Advance, Warren for President September 2019 – March 2020

Directed press logistics for Elizabeth Warren's 2020 presidential campaign. Managed a team of over 25 press advance staff on trips across the country. Negotiated press access on behalf of the campaign and press corps. Led team of associates that coordinated all press interactions with Senator Warren, including 1:1 interviews, media availabilities and open press events.

Deputy Communications Director, City of Detroit February 2017 – August 2019

Managed day-to-day media relations and strategic planning to promote the Mayor's agenda. Portfolio included Planning, Housing and Economic Development departments, managing policy rollouts and inquiries. Coordinated across departments to ensure consistent messaging among the organization's 9,000 employees. Previously held title of Strategic Communications Advisor.

Press Lead, Hillary for America February 2016 – November 2016

Traveled in advance of principals for the Hillary for America campaign to plan and execute campaign events, including rallies, press conferences, and speeches. Worked with the press to coordinate logistics for events, interviews and media opportunities.

Press Advance, The White House September 2015 – April 2016

Traveled in advance of President Obama to plan and execute trips domestically and internationally.

Communications Intern, The White House May 2015 – August 2015

Compiled daily clips, fielded media inquiries and supported regional and specialty communications.

Education

Wayne State University, Bachelor of Arts in Journalism 2015

Studied journalism and political science at Wayne State University in Detroit. Member of the Journalism Institute for Media Diversity, an honors program dedicated to increasing diversity in the fields of journalism and communications.

ALISON L. CASSADY

• (b) (6)

PROFESSIONAL EXPERIENCE

U.S. HOUSE OF REPRESENTATIVES, SELECT COMMITTEE ON THE CLIMATE CRISIS

Deputy Staff Director, Democrats

February 2019-September 2020

- Managed a team of lawyers and scientists to conceptualize, draft, and deliver a 550-page [congressional policy roadmap](#) for achieving net zero emissions by 2050 and building a clean energy economy that values workers and advances environmental justice. House Speaker Nancy Pelosi and the Select Committee's Democrats released the report on June 30, 2020.
- Actively engaged with and solicited input from hundreds of stakeholders, including labor unions, NGOs, environmental justice leaders, industry trade associations, and the private sector, to inform the Select Committee Democrats' climate policy recommendations and strategy.
- Coordinated with House and Senate Democratic leadership and committee staff to identify and overcome policy and political challenges on the most controversial climate issues.
- Played a lead role in conceptualizing and executing 18 committee hearings to build the official record for the Select Committee Democrats' policy recommendations to Congress.
- Advised Chair Kathy Castor (D-FL) and Democratic Members on critical policy questions and committee strategy.

CENTER FOR AMERICAN PROGRESS

Managing Director, Energy and Environment Team
Director of Domestic Energy Policy

September 2017-February 2019
September 2014-February 2019

- Provided strategic planning and managerial support to the Energy and Environment team's 25 staff members working on climate change policy, public lands conservation, and ocean protection. Directly supervised six staff and contractors.
- Managed the team's \$5 million budget, including grant spending, contracts, and personnel salaries.
- Acted as chief project manager for multi-issue workstreams that cut across CAP policy teams and required the Energy and Environment team to engage and provide input.
- Represented CAP on the Climate Action Campaign's Steering and Coordinating Committees to help shape the strategies and tactics of a multi-million-dollar, multi-organization campaign.
- Wrote reports and policy briefs on domestic energy and climate issues, including carbon pricing, electric and autonomous vehicles, and other topics.

U.S. HOUSE OF REPRESENTATIVES, COMMITTEE ON ENERGY & COMMERCE

Senior Professional Staff, Democrats

January 2009-September 2014

- When in the majority, negotiated legislation to secure America's drinking water systems and chemical plants from terrorist attack. Won House passage of the legislation in November 2009.
- Planned and executed high-profile legislative and investigative committee hearings on a range of topics, including the BP oil spill and a fatal chemical plant explosion in West Virginia. Led first congressional investigation into hydraulic fracturing and its impact on water quality.
- When in the minority, defended President Obama's Climate Action Plan and air quality standards from legislative attack by analyzing draft legislation and providing Democratic members with background memos, talking points, and questions for hearing witnesses.

U.S. HOUSE OF REPRESENTATIVES, COMMITTEE ON OVERSIGHT & GOVERNMENT REFORM

Professional Staff, Democrats

November 2007-January 2009

- Investigated the mortgage and credit crisis of 2007-2008, culminating in several high-profile hearings on executive compensation at global financial institutions; the bankruptcy of Lehman Brothers; and the role of credit rating agencies in the financial collapse.
- Planned and executed committee hearings by reviewing company and government documents, identifying and interviewing witnesses, and preparing lines of questions for the members.

ENVIRONMENT AMERICA/U.S. PUBLIC INTEREST RESEARCH GROUP

Research Director, Washington, DC

July 2001-August 2007

- Worked with 10 advocates to conceptualize and develop newsworthy and on-message research reports that advanced the organization's policy goals. Held bottom-line responsibility for the quality and accuracy of ~20 research reports each year.
- Authored or co-authored more than 25 research reports on global warming, toxic pollution, air quality, product safety, financial privacy, campaign finance reform, and other issues.

Associate Director of Development, Los Angeles, CA

February 1998-July 2001

- Served as a grant-making clearinghouse for more than 20 state organizations working to raise money from private foundations.
- Wrote grant proposals for a range of environmental and consumer protection projects.

INVESTOR RESPONSIBILITY RESEARCH CENTER

Research Assistant, Washington, DC

October 1996-August 1997

- Provided research support for IRRC's Environmental Information Service on corporate environmental responsibility issues.
- Compiled data for IRRC's Corporate Environmental Profiles Directory, a summary of corporate environmental activity at S&P 500 companies sold to institutional and private investors.

EDUCATION

Indiana University, School of Public and Environmental Affairs

Master of Public Affairs

Focus: Public Policy Analysis

Georgetown University, School of Foreign Service

B.S. in Foreign Service, *magna cum laude*

Major: International Politics

PROFESSIONAL EXPERIENCE:

President & CEO

11/02 -Present

The Chase Group Consulting Company

New York, NY

The Chase Group serves several Native and non-Native not-for-profit groups regarding public policy, development, public relations, strategic planning and management issues. Clients include the African American Policy Institute, a New York City national center that does policy analysis and community based outreach and education; RamScale Productions, a New York multi-media arts center that does both multi-cultural and commercial programming; the Leaderful Communities Network, an initiative of the Rockefeller Foundation Next Generation Leadership Program designed to promote a more participatory democracy; the Youth Justice Funding Collaborative, a collaborative of philanthropists and activists committed to developing media strategies for juvenile justice organizations; the Praxis Project, a national nonprofit organization that works with local groups and communities to influence policymaking; the National Congress of American Indians, the oldest and largest national Indigenous organization committed to protecting and promoting the rights of Native Nations and their citizens; Native Action, a Montana based community organization committed to bridging racial, socio-economic and environmental barriers; the United Tribes Technical College; Evergreen College; The National Museum of the American Indian; Grantmakers in the Arts; the Ford Foundation's Media, Arts & Culture Unit; and the American Indian Community House.

Director

01/11- 01/16

American Indian Environmental Office, Environmental Protection Agency

Washington, DC

AIEO leads the Agency's efforts to protect human health and the environment of federally recognized tribes. The Director provides national leadership, advice and assistance on Indian affairs to senior officials throughout the agency. The Director represents the agency at national and international conferences, symposia and meetings, frequently making major policy presentations and recommendations.

Executive Director

09/01-11/2002

National Network of Grantmakers

New York, NY

The National Network of Grantmakers is a network of individuals involved in philanthropy committed to moving more philanthropic resources to social justice issues. The Executive Director serves as the primary spokesperson for the organization and is responsible for day-to-day management. Unique responsibilities including coordinating a transition of the organization to New York City and setting forth a new, vibrant, comprehensive program agenda designed to advance the goals and mission of the organization.

Executive Director

4/94 - 4/2001

National Congress of American Indians & NCAI Fund

Washington, DC

The National Congress of American Indians is this country's oldest, largest and most representational Native organization, currently representing over 270 tribes in our nation's capital. The Executive Director advocates on behalf of tribal governments via a 501 (c) 4, known as the "Congress" and is responsible for the development and implementation of public educational programs and services via a 501 (c) 3, known as the "Fund.". The Executive Director serves as the primary spokesperson for the organization and is responsible for all aspects of day-to-day management, fund raising and membership recruitment and retention. The Executive Director interfaces with Tribal Leaders, Congress, the Executive Branch, state and local government officials and the civil rights community.

Director of Governmental Affairs

09/93 - 04/94

National Congress of American Indians & NCAI Fund

Washington, DC

Designed and implemented the organization's governmental affairs program, which included public policy development, implementation and oversight, advocacy, drafting legislation and providing analysis, while directing two staff members and several interns.

Deputy Director

11/91 - 09/93

National Commission on American Indian, Alaska Native and Native Hawaiian Housing

Washington, DC

This Commission was chartered by the U.S. Congress to assess the state of Native housing nationally. As Deputy Director, I co-authored the final report submitted to Congress; facilitated numerous hearings across the country; interfaced with tribal and congressional leaders; and managed media relations.

Consultant

1987

American Indian Lawyer Training Program

Oakland, CA

Assisted in the development and implementation of a survey assessing needs of Indian Tribes regarding natural resource development and management; conference planning for tribal water management training program; and, fund-raising/development.

Policy Analyst

1986

National Congress of American Indians & NCAI Fund

Washington, DC

Participated in developing congressional testimony; lobbying Congress, Federal and state agencies; and fund-raising/development. Served as Director of Inter-generational Health Promotion and Education Program, designed to promote healthy living and battle drug and alcohol abuse among Native American youth; and national conference planning.

OTHER EXPERIENCE:

Honors Program Participant

09/90 - 11/91

U.S. Department of Justice

Washington, DC

Environment and Natural Resources

Law Clerk

05/89 - 08/89

Freedman, Boyd & Daniels

Albuquerque, NM

Research Assistant

1988

Harvard Law School

Cambridge, MA

Summer Associate

1988

Gover, Stetson & Williams

Albuquerque, NM

Special Assistant to Congresswoman Boxer

1985

U.S. House of Representatives

Washington DC

Intern

1984

Congressional Caucus for Women's Issues

Washington, DC

Intern for Congressman Byron Dorgan

1983

U.S. House of Representatives

Washington, DC

EDUCATION:

University of New Mexico School of Law; 1987-90
Albuquerque, New Mexico; J. D. 1990
Dean's List; Spring Semester; 1989
Honor Roll; Spring Semester; 1989
Best Oral Advocate; Moot Court Competition; 1988-89
UNM Law Review: Member; 1989-90
UNM National Moot Court Team; Member 1988-89
UNM Student Bar Association; President 1989-90
National American Indian Law Students Association Board of Directors; 1989-90

Boston University; 1981-85
Boston, Massachusetts; B.A. Film Theory and Criticism; Public Policy.
Magna Cum Laude

AWARDS AND SELECTED PUBLIC SERVICE:

Harlem Stage Board of Directors, Chair; July 2014 – Present
Visiting Scholar, The New School; January 2017- August 2017
The Praxis Project Board of Directors; July 2008 – January 2016
Free Speech TV Board of Directors; April 2007 – 2010
Rockefeller Foundation Next Generation Leadership Fellow; 2001 – 2004
One American Foundation Board of Directors; 2001 – 2010
Harvard University's Honoring Nation's Advisory Board; 1998 – Present
Native American Educational Services College Board of Trustees; 1997 – 2007
Center for Women's Policy Studies Policy Council; 2000 – 2002
International Human Rights Law Group Advisory Board; 1999 – 2001
Special Rapporteur, Indigenous Caucus, UN World Conference Against Racism – 2001
Expert Witness on Indigenous Issues, Committee on the Elimination of Racial Discrimination - 2001
National Committee for Responsive Philanthropy Board of Directors; 1997 – 2001
Native American Public Telecommunications Board of Directors; 1997-2000; 2007 to 2010
Leadership Conference on Civil Rights Board and Executive Committee; 1996 – 2001

References for JoAnn Kay Chase

Lisa P. Jackson

Senior Vice President of Environment, Policy and Social Initiatives, Apple; Former Administrator, Environmental Protection Agency

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Michelle DePass

President & CEO, Meyer Memorial Trust; Former Assistant Administrator for the Office of International and Tribal Affairs, Environmental Protection Agency

(b) (6)

Nona Hendryx

Singer, Cultural Icon
(917) 969-9978

Mark Macarro

Tribal Chairman, Pechanga Band of Luiseno Indians
(951) 533-7000

Keith Harper

Former Ambassador to the United Nations Commission on Human Rights
(202) 262-9544

Letitia Chambers

Former Director, Heard Museum; Former United States Ambassador to the United Nations General Assembly
(202) 679-2661

John Haworth

Director, George Gustav Heye Center (National Museum of the American Indian in New York City)
(212) 514-3770

Hilary O. Shelton

Director, NAACP Washington Bureau
(202) 463-2940

JoAnn Kay Chase

JoAnn Chase is a citizen of the Mandan, Hidatsa and Arikara Indian Nation, and was born and raised on the Fort Berthold Indian Reservation in central North Dakota. She is a social justice advocate and innovative strategist committed to building a more inclusive democracy.

In 2010, JoAnn accepted an appointment from President Barak Obama as Senior Advisor to the Administrator of the Environmental Protection Agency for Native American Affairs and returned to Washington, DC. In this capacity she was responsible for coordinating the Agency-wide effort to strengthen public health and environmental protection in Indian Country, with a special emphasis on helping tribal governments administer their own environmental programs by improving consultation, collaboration, and support for EPA's tribal partners.

Most recently, upon her return to New York City, JoAnn has partnered with music icon Nona Hendryx and social justice innovator, Makani Themba, to launch SisterSMATR.org. Focused predominately on providing opportunity for young women of color, SisterSMATR (Math, Art, Technology, Robotics) leverages art and community to close the gender gap in science and technology.

Previously, for nearly a decade, JoAnn served as the Executive Director of the National Congress of American Indians, this country's oldest and largest national Indian membership organization. Under her leadership, she tripled the organization's staff, operating budget and tribal membership. She facilitated unprecedented visibility and viability for NCAI as a strong and credible voice for Native America. She was also the Director of the National Network of Grantmakers.

JoAnn has a law degree from the University of New Mexico Law School and a baccalaureate in film theory and criticism from Boston University. She was selected as the Special Rapporteur for the Indigenous Caucus at the World Conference Against Racism. She appeared before the Committee on the Elimination of Racial Discrimination as an expert witness on Indigenous issues. JoAnn is a recipient of the Rockefeller Foundation's Next Generation Leadership Fellowship. She also served on the Board of Directors for The Leadership Council on Civil Rights, The Praxis Project, Harvard University's Honoring Nations' Program and Native American Public Telecommunications. She was a visiting Scholar in Residence at the New School's Tishman Environment and Design Center. Currently, JoAnn is the President of the Board of Directors of Harlem Stage, a unique arts venue located in New York City, providing opportunity, commissioning and support for artists of color.

DIMPLE CHAUDHARY

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EXPERIENCE

2013-present **NATURAL RESOURCES DEFENSE COUNCIL (NRDC)**, Washington, DC
Deputy Litigation Director, 2020-21; Managing Litigator, 2018-20; Senior Attorney, 2013-2018

Manages a team of more than forty litigators and paralegals at leading environmental advocacy organization with 700+ staff. Serves as lead counsel in litigation matters.

Management responsibilities include hiring and supervision of staff, budget management, coordinating with internal and external experts on policy and litigation, assisting with institutional agenda-setting, identifying litigation priorities, and designing legal strategy. NRDC litigators have filed more than 100 lawsuits against the Trump administration over its rollbacks of health and environmental protections, winning more than 90% of the cases that have been resolved.

Litigation responsibilities include serving as lead counsel in public interest environmental cases on behalf of NRDC and community clients, with a focus on environmental justice and public health. Leads case teams that include attorneys, paralegals, experts, and other staff in all aspects of litigation including case development, fact and expert discovery, motion practice, oral argument, trial, settlement, public and legislative outreach, budgeting, and press strategy.

Representative matters include:

- ***Concerned Pastors for Social Action et al. v. Khouri, et al.* (E.D. Mich. 2016).** Lead counsel in Safe Drinking Water Act case filed in federal district court on behalf of community groups and residents in Flint, Michigan, in response to lead contamination in Flint's drinking water. Case resulted in a preliminary injunction ordering city and state officials to provide tap water filters and door-to-door bottled water delivery to Flint residents. Won a \$100 million settlement requiring the removal of Flint's lead service lines within three years, faucet filter installation and maintenance, and independent monitoring of residents' tap water for lead. Under settlement terms, the City of Flint has excavated more than 25,000 water service lines and replaced nearly 10,000 made of lead or galvanized steel.
- ***Public Utility Commission v. Pittsburgh Water and Sewer Authority* (Pa. PUC 2019).** Lead counsel for a coalition of faith, environmental, and labor advocates in Pittsburgh in state proceeding to evaluate the city water authority's response to lead contamination. Won a settlement that controls how water authority will spend nearly \$50 million to safely remove lead service lines including by requiring utility to: replace all lead service lines by 2026; prioritize neighborhoods with low-income and at-risk residents; and

create a community advisory board for consultation with on all aspects of program.

- ***In re Reckitt Benckiser, LLC et al. (proceedings before EPA Administrator 2013)***. Lead counsel for environmental justice advocates and nonprofit groups in a case against a corporate manufacturer that successfully removed from the market a rodent poison that posed a health risk to children.
- ***NRDC v. FDA et al. (S.D.N.Y 2010)***. Lead counsel in negotiation of a consent decree with the Food and Drug Administration requiring the issuance of an administrative rule regulating the use of triclosan, a harmful chemical, in consumer products.

2008-2012 **WILMER HALE LLP**, Boston, MA and Washington, DC

Senior Associate

Represented institutional and individual clients in complex civil litigation. Experience included managing complex discovery, drafting briefs, arguing motions, examining witnesses at trial, taking and defending depositions. Advised multi-national company in federal government investigation. Served as member of diversity committee. Representative matters include:

- ***Ford v. Bender et al.*** (D. Mass. 2007). Represented pro bono client in summary judgment, trial, and appeal in a civil rights dispute alleging unlawful detention in solitary confinement at a state prison as a pretrial detainee.
- ***Palomar Medical Technologies, Inc., et al. v. Tria Beauty, Inc.*** (D. Mass. 2009), ***Palomar Medical Technologies, Inc., et al. v. Syneron, Inc.*** (D. Mass. 2008). Represented technology company in complex civil litigation involving contractual and intellectual property disputes.

Spring 2007 **FORDHAM UNIVERSITY SCHOOL OF LAW**, New York, NY

Adjunct Professor of Law

Taught seminar entitled “Environmental Law and Justice.” Instructed students on theories of environmental justice with a focus on practical application in litigation and community advocacy. Coordinated student externship placements at non-profit groups.

2005-2007 **NATURAL RESOURCES DEFENSE COUNCIL**, New York, NY

Urban Legal Fellow

Conducted federal litigation in cases involving public health, resource protection, and governmental transparency. Drafted briefs, prepared legal memoranda, performed research. Assisted in designing trial strategy for suit against major oil company. Worked with community coalitions on policy projects related to drinking water protection and solid waste disposal.

CLERKSHIP

2007-2008 **U.S. DISTRICT COURT, EASTERN DISTRICT OF NY**, New York, NY

Law Clerk to the Honorable Carol Bagley Amon

EDUCATION

- 2002-2005 **COLUMBIA UNIVERSITY SCHOOL OF LAW**, New York, NY
Juris Doctor. Honors: Harlan Fiske Stone Scholar; Robert Noxan Toppan Prize in Constitutional Law; Alfred A. Forsyth Prize in Environmental Law; Human Rights Internship Award; Thomas Scheuer Fellow in Public Interest Law. Activities: *Columbia Human Rights Law Review* (Articles Editor); Columbia Environmental Law Clinic; Research Assistant to Professor Jack Greenberg; Political Asylum Project; South Asian Law Students Association.
- 2001-2002 **LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE**, London, England
Master of Science in Urban and Regional Planning Studies, with distinction. Master's dissertation: "Urban Diaspora: The Formation and Implication of Indian Ethnic Enclaves."
- 1997-2001 **HARVARD UNIVERSITY**, Cambridge, MA
Bachelor of Arts in Social Studies, *magna cum laude*. Senior honors thesis: "Growing from the Grassroots: Democratic Participation in the Self-Employed Women's Association of Ahmedabad, India. Honors: Harvard College Scholarship; Arthur Liman Public Interest Law Fellowship; Weatherhead Center for International Affairs Research Fellow; Asia Center Fellow. Activities: Institute of Politics; *Harvard Political Review*.

SELECTED PRESENTATIONS

- "Emerging Contaminants: A Trial Lawyer's Discussion," November 2019, Environmental Litigation 2019 – American Law Institute
- "The Safe Drinking Water Act, Overview and Update," June 2017, Environmental Regulation 2017: Hot Topics, Regulatory Developments, and Practical Guidance for Corporate Compliance – Practising Law Institute
- "What's in the Water?" April, 2017, Hot Topics in Toxic Torts and Environmental Law – American Bar Association
- "The Color of Water: A Teach-in on Flint, Michigan," March 2016 – George Washington University

PUBLICATIONS

Dimple Chaudhary, Albert Huang, and Patrice Simms, Making Environmental Justice a National Priority, Responsive Philanthropy (Summer 2006), <https://www.ncrp.org/publication/making-environmental-justice-national-priority>.

ADMISSIONS

District of Columbia (2011); Massachusetts (2009); New York (2006). U.S. Court of Appeals, District of Columbia (2013); U.S. Court of Appeals, Sixth Circuit (2016); U.S. Court of Appeals, First Circuit (2012); U.S. District Court, Southern District of New York (2006); U.S. District Court, Eastern District of New York (2007); U.S. District Court, District of Massachusetts (2009); U.S. District Court, Eastern District of Michigan (2015).

NICHOLAS CONGER

EXPERIENCE

2017-Present

OFFICE OF AL GORE

Nashville, TN

Communications Director

- Communications Director, strategic advisor, and spokesperson for VP Gore, managing teams across his non-profit, private-sector, and personal climate advocacy work.
- Built and maintain strong relationships with top print and broadcast reporters/producers/bookers + stakeholders in international, state, and federal governments.
- Travel with the former VP to international climate gatherings and high-profile public appearances executing press conferences, speechwriting, social media, stakeholder engagement.
- Developed/placed op-eds including recently in the *New York Times*, secured TV hits on NBC Nightly News/Today Show, MSNBC, CNN, PBS, and more.
- Skilled in rapid response press and messaging.

2017

NATURAL RESOURCES DEFENSE COUNCIL (NRDC)

Washington, D.C.

Press Secretary, Federal Communications

- Developed media/messaging strategy and served as spokesperson for advocacy campaigns on clean transportation, renewable energy, and EPA accountability.
- Created blogs and op-eds under my byline and for NRDC experts. Placements included *USA Today*, *Detroit Free Press*, *The Hill*, and newspapers in targeted states.
- Led communications program for E2, NRDC's affiliate non-profit representing business leaders and investors.
- Led social media advocacy in DC. Developed program to support federal lobbying efforts with digital and interactive content.
- Liaison to policy, legal, and communications staff at major environmental NGOs and to network of former EPA officials.

2013-2017

U.S. ENVIRONMENTAL PROTECTION AGENCY

Washington, D.C.

Strategic Communications Advisor, Office of the Administrator

Deputy Press Secretary

- National press secretary for transportation policy, environmental justice, and enforcement. Deep understanding of environmental subject matter and political issues.
- Led communications strategy and served as spokesman for Volkswagen diesel emissions and Deepwater Horizon cases, among other major initiatives, working in close coordination with DOJ.
- Prepared and staffed Administrator McCarthy and other EPA leadership at public appearances and media interviews.
- Developed op-eds, speeches, and blog posts with the Administrator and other EPA leadership.
- Launched first Twitter account for the enforcement office and served as editor-in-chief of website.

2010-2013

WORLD WILDLIFE FUND

Washington, D.C.

Deputy Director, Media and External Affairs

- Led communications and press strategy for WWF's work with major companies.
- Launched and managed WWF-Coca-Cola "Arctic Home" campaign helping to generate \$1.8M in first year.
- Worked closely with senior leadership at top companies on joint press activities and events, including McDonald's, Walmart and Cargill.
- Launched WWF's first blog and social media program dedicated to corporate sustainability.

- 2003, '08, '12 **DEMOCRATIC PARTY** Washington, DC / Denver, CO / Charlotte, NC / Nashville, TN
Press Officer & Volunteer
- Press officer for Obama campaign faith-based ('08) and environmental ('12) platforms at the Democratic Conventions.
 - Press volunteer with John Kerry for President (June-Sept 2003) managing media relations, grassroots outreach, and research.
 - Canvassing volunteer for Phil Bredeesen's 2018 and Jaime Harrison's 2020 Senate campaigns.
- 2005-2010 **EDELMAN PUBLIC RELATIONS** Washington, D.C.
Senior Account Supervisor
- Developed and executed communication programs for corporate and government clients including Walmart, U.S. Department of Commerce, Motorola, and Air Transport Association.
 - Managed Walmart's engagement with environmental NGOs, and developed programs that resulted in winning the Aspen Institute's Corporate Energy Efficiency Award, inclusion on the EPA's Green Power Partnership, and top rankings with CERES and Carbon Disclosure Project.
 - Press officer for the rollouts of the 9/11 Commission Report and Iraq Study Group Report.
 - Developed public affairs program for the U.S. airlines around cap-and-trade legislation in 2009.
- 2004-2005 **LIPMAN HEARNE** Washington, D.C.
Program Associate
- Communications staffer for non-profit clients, helping to promote and advance mission-driven PR campaigns.
 - Secured media coverage for the MacArthur Foundation's Fellowship Program in the local markets of selected recipients.
 - Managed press outreach for the University of Chicago Graduate School of Business as it moved European campus.

EDUCATION

- 2003 **CLEMSON UNIVERSITY** Clemson, SC
B.A. Communications Studies

Catie Diaz

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PROFESSIONAL EXPERIENCE

Arizona Democratic Party

Flagstaff, AZ

Digital Organizing Associate, Coordinated Campaign

October 2020—November 2020

- Flipped a senate seat and red-state by co-managing a Slack channel of ~3,000 texting volunteers and 78 volunteer leaders who obtained 58% of support IDs for Mark Kelly and 63% of support IDs for Joe Biden
- Served as email lead, developing and managing the campaign's nation-wide distributed email program
- Wrote email copy for an audience of over 30K activists with a 32% open rate and 6% rate of activists taking action
- Managed email requests for all departments and communicated needs to campaign headquarters
- Trained organizers on ThruText for a ballot cure push across five days to ensure every vote is counted

Mobilization Director, AZ-01

September 2020—October 2020

- Ran texting campaigns by writing persuasion, recruitment, and turnout scripts, exporting targeted lists from VAN to CSV, and managing the campaigns through OutVote
- Audited the campaign's 50+ virtual events on MobilizeAmerica by updating event titles, language describing upcoming events, and creating new graphics to make the site more uniform and intentional
- Led meetings by giving updates from the mobilization department, conducting a discussion of successes, difficulties, and new ideas, then had organizers report out on best practices for collaboration

Field Organizer, Coordinated Campaign

May 2020—September 2020

- Hired, on-boarded, and managed 5 student fellows to assist in the planning, recruitment, and follow up of 5 virtual Weekends of Action in preparation for the virtual Get Out The Vote operation
- Recruited a team of 30 active phone bankers who volunteered 1-3 times a week
- Trained volunteers between the ages of 17-87 on how to use digital organizing tools efficiently such as VAN, OpenVPB, ThruTalk, ThruText, Zoom, and Slack

Warren for President

Fort Worth, TX & North Liberty, IA

Field Organizer

September 2019 – March 2020

Intern

Summer 2019

- Built and engaged a network of activists in six Iowa precincts and two Texas counties by conducting almost 100 one-on-one meetings, making ~20,000 recruitment dials, and knocking ~4,000 doors
- Prospected, confirmed, and trained 24 volunteer precinct leadership team members on the campaign's strategy to secure the second-highest amount of delegates in assigned precincts in a race of 11 candidates
- Was selected to write an online article for the campaign's social media presence that engaged and activated supporters of the campaign leading up to the Iowa Caucus

Campus Election Engagement Project

Iowa City, IA

Fellow

August 2018 – May 2019

- Increased voter turnout on campus by 16% in collaboration with the Hawk the Vote Coalition by planning and executing voter registration tabling events and voter education presentations
- Established a campus voting hub by creating a proposal and sustainable communications plan for the University of Iowa
- Applied for a grant of \$1,500 by writing a proposal stating the plan, objectives, proposed budget, and evaluation of an event series focused on voter registration and voter education

EDUCATION

University of Iowa

Iowa City, IA

B.A. in Global Health Studies; Certificate in Fundraising and Philanthropy Communication

May 2019

Relevant Courses: Nonprofit/Fundraising Communication; Ethics, Politics, Global Health; Global Public Health

Leadership: Global Health Studies Student Ambassador (2019), Her Campus Media Events Director (2018)

SKILLS

Technology: ActionNetwork, VAN, ThruText, OutVote, MobilizeAmerica, Zoom, Microsoft Office, G Suite

Communication: Public speaking, Facebook, Twitter, YouTube, Instagram, Slack

BRENT EFRON

[he/him/his]

(b) (6)

TECHNICAL SKILLS

Google Sheets, VAN Admin,
SQL, Google Data Studio,
HTML (Basic Proficiency)

EDUCATION

Washington University in St.
Louis
Mechanical Engineering,
2018

Relevant Courses: Intro to
Computer Science I+2,
Probability and Statistics,
Reliability and Quality
Control, Designing
Sustainable Social Policies &
Programs: A System Dynamics
Approach, Computer Aided
Design

Change the Game
Data Bootcamp,
Summer 2020

SOCIAL

Twitter: @BrentDEfron
GitHub: BrentDEfron
LinkedIn: Brentefron

DATA/ANALYTICS EXPERIENCE

North Carolina Coordinated Campaign, Deputy Data Director for Organizing
Remote — August 2020 - November 2020

- Designed and co-built a system that automatically populated Google Sheets every day for 28 days, which subsequently synced shift statuses with VAN nightly, streamlining organizers' and volunteer leaders' ability to manage and confirm volunteers across 80 staging locations during the period of greatest volunteer activity
- Built a CSV spreadsheet and designed a Google Sheets and Google Data Studio reports for the Organizing, Digital, GOTV and Voter Protection departments, including an automated daily volunteer activity email to organizers, progress to goal (PTG) reports for field organizers, ballot cure canvass regional directors and campus fellows, an active volunteers report, unverse penetration reports for GOTV, ballot cure and provisional ballot unverses, an out of state capacity dashboard, and more
- Served as lead in-state Administrator for the the backend of ThruTalk (autodialer) where we made over 10 million GOTV phone attempts
- Facilitated weekly statewide trainings and Q&As for organizers and regionals on data skills including but not limited to VAN and Google Sheets
- Led the fulfillment of over 150 data support tickets

EXAMPLE REPORTS (Links):

[Example Consolidated GOTV Confirmation Sheet](#)
[GOTV PTC](#)
[Ballot Cure Unverse Penetration](#)

[Automated Daily Email to Organizer](#)
[Ballot Cure Canvass PTC](#)

OTHER CAMPAIGN EXPERIENCE

Warren for President, Field Organizer

Council Bluffs, A + Columbus, OH — June 2019 - March 2020

- Created systems for managing four organizing fellows with daily check-in and check-out calls, metrics reporting on Google Sheets and following up on progress to hitting goal
- Managed six Staging Locations across Southwest Iowa during Get Out the Caucus as a Regional GOTC Desk and oversaw and coached volunteers on reporting, re-shifting, confirm + chase calls, turf priority order, data entry in VAN and Google Sheets and the distribution of supplies to precinct captains on caucus night
- Recruited and managed an unprecedented organization in Southwest Iowa with eight volunteer leaders running weekly canvasses and phone banks and five leaders running a Staging Location for GOTC
- Trained, coached and managed 21 Precinct Captains who in turn managed 19 precinct team members to execute our caucus night strategy

Democratic Party of Wisconsin, Field Organizer,
Elkhorn, WI — July 2018 - November 2018

- Built five independent, volunteer-led teams who, combined, activated over 120 volunteers, knocked 13,567 doors and made over 20,000 phone calls in Walworth County
- Managed 11 volunteer leaders and three organizing fellows

OTHER RELEVANT EXPERIENCE

Solstice, Outreach Associate

Cambridge, MA - January 2019 - May 2019

- Exceeded sales goals by 100%-300% through cold calls and calls to inbound leads who filled out an interest form online, making the economic and environmental benefits of solar energy more accessible
- Enrolled Solstice's largest ever client, a large non-profit that owns dozens of residential properties, by bringing it through the entire Sales funnel, prospecting to converted

SIMS@WUSTL, Undergraduate Research Assistant

St. Louis, MO — June 2016 - August 2016

- Worked on a project for the designing, fabricating and testing of a platform for manipulation of algae cells to enable experimental imaging, observation and investigation of flagellar motion

MARIANNE ENGELMAN LADO

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Education

M.A., Politics Department, Princeton University -- fields of study: American Politics, Public Law and African American Political Thought (1989)

J.D., University of California, Berkeley, School of Law (1987)

B.A., magna cum laude in Government, Cornell University, College of Arts and Sciences, with distinction in all subjects (1984)

Professional Experience

Associate Professor of Law, Director of Environmental Justice Clinic (July 2020 – present); **Visiting Professor of Law, Douglas Costle Chair in Environmental Law, Vermont Law School** (July 2019 – June 2020). Direct Environmental Justice Clinic representing communities of color and low-income communities fighting disproportionate environmental burdens. Multi-faceted docket includes litigation, administrative advocacy, and long-term systemic legal and policy reform on federal and state levels. Coordinate national alliance for civil rights reform in the environmental justice context that works collaboratively to develop and implement legal, policy and communication strategies. Provide counsel to community groups on national legislative proposals on environmental justice issues and the regulation of industrial agriculture. Co-counsel for *CARE v. EPA*, successful federal court litigation challenging EPA's unreasonable delay in investigations of civil rights complaints. Launched Climate Justice Practicum in collaboration with Yale School of Public Health in fall, 2020. Supervise Clinic faculty, staff, and students. Responsible for clinic budget, fundraising (including grants and contracts), and communications. Serve on Admissions and Dean Search Committees.

Lecturer, Yale University School of the Environment, Yale University School of Public Health (August 2018 – present). Co-teach clinic on climate change, sustainability and public health and taught environmental justice capstone, both engaging interdisciplinary teams on projects and cases on behalf of environmentally overburdened communities of color and low-income communities. Projects focus on civil rights enforcement in the environmental and climate justice context, including litigation, administrative cases, legislative initiatives, and work with communities to collect and gather information about the effects of landfills and other sources of contamination. In the spring of 2020, the Climate Change Clinic issued *Scoping and Recommendations for the Development of a Connecticut Environmental Justice Mapping Tool*, which has created momentum for the developing of a mapping tool in Connecticut.

Of Counsel, Poverty & Race Research Action Council (PRRAC) (September 2018 – June 2019). Collaboration on efforts to build capacity of environmental justice groups seeking enforcement of civil rights and environmental laws. Docket included administrative cases, as well as initiative creating a repository of civil rights materials for use by communities and the general public.

Florence Rogatz Visiting Clinical Professor of Law at Yale Law School (January 2017 – July 2018). Launched Environmental Justice Law Clinic with students from Yale Law School, the School of Forestry and Environmental Studies and the School of Public Health. The Clinic's docket included cases and advocacy to advance environmental justice, with a particular focus on enforcement of civil rights in the environmental justice context. The Clinic involved 18 students in the breadth of community-based legal practice, including litigation, administrative advocacy, and case development. The Clinic represented community members and groups in administrative complaints filed with EPA under Title VI of the Civil Rights Act of 1964, FOIA practice, and *CARE v. EPA*, a federal court challenge to EPA's unreasonable delay in investigations of civil rights complaints. The Clinic also partnered with the Practicum in Climate Change, Sustainability, and Public Health on air pollution monitoring projects to develop the evidentiary base for advocacy in Tallassee, Alabama, and Beaumont, Texas. Co-taught Veterans Legal Services Clinic, Spring and Fall, 2017.

Senior Staff Attorney, Earthjustice (2010 – 2016). Docket focused on civil rights enforcement at EPA, the public's right to information about toxics, the regulation of toxic chemicals, including dispersants used in response to the BP oil disaster in the Gulf of Mexico, and the impacts of concentrated animal feeding operations (CAFOs). Coordinated environmental health litigation and supervised legal and other staff. Litigation and advocacy emphasized impacts on vulnerable and overburdened populations. Member, Earthjustice's Diversity Management Team, 2010-2015. Litigation highlights include *Buffalo River Watershed Alliance v. USDA* (successful federal litigation challenging approval of loan guarantees to swine facility on the banks of a tributary to the Buffalo National River); intervention in *SIRC v. Sebelius* (successful intervention in industry challenge to agency decision to list styrene as "reasonably anticipated to be a carcinogen" on the Report on Carcinogens); *Alaska Community Action on Toxics v. EPA* (federal court litigation to compel EPA to analyze and identify information about the toxicity of chemical dispersants); *Florida Wildlife Federation v. EPA* (Freedom of Information Act case in the Northern District of Florida for the disclosure of information about dispersants); and *Friends of the Earth v. EPA* (litigation to compel EPA to determine whether lead additives in aviation fuel endanger public health and welfare). Developed docket on behalf of community members and groups that filed administrative civil rights complaints filed with EPA and litigation to reform EPA's Title VI enforcement program. Served on the Steering Committee of Safer Chemicals, Healthy Families and worked on reform of the Toxic Substances Control Act.

Lecturer, Columbia Law School and the Earth Institute, Columbia School of Professional Studies (2013 – 2016). Taught Environmental Justice seminar that

examined the environmental justice movement, its origins, tenets, challenges, and strategies, focusing on the role of lawyers and litigation-based strategies.

Visiting Assistant Professor, Seton Hall University School of Law (2009 – 2010).

Adjunct (Spring 2011). Taught family law, conducted research, and involved in student advisement. Research interests include role of civil rights law in addressing barriers of access to health care, disability rights, and African American legal traditions.

Consultant, National Campaign to Restore Civil Rights (2009 – 2012). Worked with staff on strategic direction of Campaign focusing on emerging challenges to enforcement of rights in the federal courts. The Campaign partnered with scores of organizations nationwide to strategize and raise awareness about developing jurisprudence on Congressional authority, sovereign immunity, rights of action, standing, and other doctrines that have an impact on the enforcement of laws that are vital to social justice.

General Counsel, New York Lawyers for the Public Interest (1999-2009).

Led and supervised a civil rights legal program, including impact litigation, individual representation, administrative advocacy, community organizing, communications strategies and public education on issues of racial justice (Access to Health Care and Environmental Justice) and disability rights (Education, Opportunity & Access, and Deinstitutionalization). Managed and supervised legal and non-legal staff. Oversaw and was directly involved in litigation in state and federal court, as well as advocacy. Developed and supervised the National Campaign to Restore Civil Rights. Served as counsel to the organization, reviewing contracts and drafting policies, and played key role with fundraising, grants, overall management, and government reporting. Liaison to state agency providing funding through the federal Protection & Advocacy system, as well as disability rights networks. Organized management and other training for staff and led organizational planning and restructuring efforts.

Litigation highlights include *Bartlett v. NYS Board of Law Examiners* (participated on remand in successful federal court suit under the ADA and Section 504 of the Rehab Act, challenging failure to provide accommodations on the bar exam); *DIA v. Duane Reade, Inc.* (litigation in the Southern District of New York to address the failure of a drug store chain with more than 300 stores to ensure that stores were accessible, pursuant to the ADA); *Posner & Queens Independent Living Center v. Parkway Hosp.* and *Jane Doe v. Interfaith Medical Center* (two federal court actions challenging the failure of hospitals to provide reasonable accommodations and effective communication to persons who are deaf); *Edwin T. v. Carpinello* (suit in the Eastern District of New York to challenge the inappropriate placement of people with psychiatric disabilities in nursing homes); *LJ v. Mattingly* (intervention in state court suit brought by the City of New York against state Office of Mental Retardation and Developmental Disabilities, aimed at addressing the failure of both agencies to coordinate and ensure that appropriate referrals and services are provided for children with disabilities in foster care); *E.W. v. Staten Island University Hospital* (federal court litigation to challenge segregation of patients with disabilities in waiting rooms and failure to provide reasonable accommodations on behalf of people with developmental disabilities); and *In Re Jane Doe* (state court proceeding challenging

the institutionalization of a child with developmental disabilities in a nursing home, part of a larger effort to address the unlawful institutionalization of children in nursing homes). Docket included complaints filed under Title VI of the Civil Rights Act of 1964 to challenge the failure of area hospitals to provide interpretation and translation services for persons who are limited English proficient (LEP).

Assistant Professor, School of Public Affairs, Baruch College (November 1996 - May 1999). Taught graduate and undergraduate level courses in public policy, health policy (MBA/MPA program for health administrators), and education law (MSEd program for education administrators). Served on school curriculum committee, college academic discipline committee, steering committees for health administration and educational administration programs, and the faculty advisory committee to the Coexistence Project. Awarded 1999-2000 PSC CUNY Research Award.

Staff Attorney, NAACP Legal Defense & Educational Fund, Inc. (LDF) (Fall 1989 - Winter 1997). (On leave, April 1993 - November 1994; Cooperating Attorney, 1997 - 1999). Litigation and advocacy within LDF's Poverty & Justice Program, representing clients addressing barriers of access to health care and quality education. State and federal court experience on educational equity including case development, trial, and appellate work in *Sheff v. O'Neill* (Connecticut state courts, filed 1989), trial work in *Mannings v. Hillsborough County School Board* (unitary status hearing in federal court, 1996), and projects on tracking and access to educational opportunities for pregnant and parenting teens and welfare recipients. Responsible for developing health care docket addressing the scarcity of health resources in medically underserved communities; discriminatory practices by the health care industry and managed care organizations; lack of access to reproductive health services; and issues of environmental justice. Initiated *The Matter of St. Luke's* (administrative action, filed 1991, pursuant to Title VI of the Civil Rights Act of 1964) and *Mussington v. SLRHC* (S.D.N.Y., filed 1992), each aimed at ensuring the accessibility of obstetric and pediatric care for poor families; worked on various other cases and projects, such as *Brewster v. White* (M.D. Tenn., filed 1991) and *Linton v. White* (M.D. Tenn., filed 1987); organized 1991 conference, "An African American Health Care Agenda: Strategies for Reforming an Unjust System;" coordinated New York City working group that successfully challenged the privatization of the public hospitals (and which launched *Queens Hospital Center Community Advisory Board v. HHC* (New York State courts, 1995), and *Campaign v. Giuliani* (New York State courts, 1996), among other cases) (1995-1997); and co-authored briefs of *amicus curiae* in *The Matter of Blue Cross, Blue Shield* (New Jersey, Appellate Division, 1990), *UAW v. Johnson Controls* (U.S. Supreme Court, October Term, 1989), *Rust v. Sullivan* (U.S. Supreme Court, October Term, 1990), *Planned Parenthood v. Casey* (U.S. Supreme Court, October Term, 1991), and *Burditt v. Sullivan* (U.S. Court of Appeals for the Fifth Circuit, 1991).

Research Director, Connecticut Education Project of the Poverty & Justice Program, LDF (Summer 1988). Supervised and conducted research on historical and ongoing inequities in the educational system within the Hartford metropolitan region.

Academic Honors and Awards

PSC CUNY Research Award (for 1999-2000); AmJur Award in Public Law (Spring, 1987); Prosser Award in Legal Ethics (Spring, 1986); Clyde Duniway Prize (awarded by Cornell University's Government Department to the top student among graduating seniors) (Spring, 1984); Phil Beta Kappa; National Merit Scholar; Cornell National Scholar.

Professional Associations; Committee and Board Service

- Co-Chair, Equity and Environmental Justice Working Group, Governor's Council on Climate Change (GC3), Connecticut (January 2020 – present)
- Board Member, WE ACT for Environmental Justice (2013 – present; Interim Chair, 2020 – present; chair, Governance Committee and secretary, 2018 - 2020)
- Co-Lead, Policy & Legal Hub; Member, Network Council; Member, Executive Committee, Cancer Free Economy Network (various roles from founding in 2014 - present)
- Board Member, African American Policy Forum (2010 – 2019)
- Advisory Board Member, Common Cause New York (2010 – 2013)
- Board Member, Center for Public Representation (2009 – present)
- Co-Chair, Access to Justice Issues Group, American Constitution Society (2007-2010)
- Federal Rights Project Advisory Council (2007-2012)
- Task Force on the Common School, the Century Foundation (2001-2002)
- Legal Committee, National Disability Rights Network (2001–2007; chair 2004-2007)
- New York City Bar
 - Legislation Committee (2005-2007)
 - Committee on Civil Rights (member, 1999-2005; chair, 2001-2005)
 - Committee on Education and the Law (1990-1992, 1999)

2nd Circuit (admitted 2015)

D.C. Circuit (admitted 2013)

Northern District of Florida (admitted 2010)

U.S. Supreme Court Bar (admitted 2009)

Southern District of New York, Eastern District of New York (admitted 1992)

New York State Bar (admitted 1988)

Publications and Writing

“Environmental Justice: A Bedrock Civil Right,” Environmental Forum (Environmental Law Institute, September, 2020).

“Environmental Injustice in Uniontown, Alabama Decades After the Civil Rights Act of 1964: It's Time for Action,” with Camila Bustos, Haley Leslie-Bole, Perry Leung, 44

ABA Human Rights Magazine (2019).

“No More Excuses: Building a New Vision of Civil Rights Enforcement in the Context of Environmental Justice,” 22 *University of Pennsylvania Journal of Law and Social Change* 281 (2019).

“Toward Civil Rights Enforcement in the Environmental Justice Context – Step One: Acknowledging the Problem,” 24 *Fordham Environmental Law Review* 1 (2017).

“Using Civil Rights Tools to Address Health Disparities,” with Robert Garcia, Marc Brenman, Michael Rodriguez, the City Project (2015), *available at* http://cityprojectca.org/publications/documents/Using_Civil_Rights_Tools_to_Address_Health_Disparities_2015.pdf.

“Title VI of the Civil Rights Act at 50: An Unfulfilled Promise at EPA,” *Poverty & Race* (July/August, 2014), *available at* http://www.prrac.org/full_text.php?text_id=1491&item_id=14956&newsletter_id=136&header=Environment&kc=1.

“Why We Can’t Wait: Reversing the Retreat on Civil Rights: An Introduction to the Civil Rights Section,” with Cristóbal Joshua Alex, et al., 30 *North Carolina Central Law Journal* 224 (2008).

“Lawyering and Litigation During the Rollback: Legal Strategies to Pursue Social Justice,” in Morgan, Denise, et al., *Awakening from the Dream: Civil Rights Under Siege and the New Struggle for Equal Justice*,” (Carolina Academic Press, 2005), 363-77.

“Unfinished Agenda: The Need for Civil Rights Litigation to Address Continuing Patterns of Race Discrimination and Inequalities in Access to Health Care,” 6 *Texas Forum on Civil Liberties & Civil Rights* 1 (2001).

“Evaluating Systems for Delivering Legal Services to the Poor: Conceptual and Methodological Considerations,” with Gregg Van Ryzin, 67 *Fordham Law Review* 2553 (1999).

“Litigation and Structural Change in Low-Income Communities: Toward a New Conceptualization of the Role of National Legal Campaigns” (Aspen Institute Roundtable on Comprehensive Community Initiatives, July, 1998).

“Civil Rights Litigation to Address Continuing Patterns of Race Discrimination and Inequalities in Access to Health Care” (requested by Long-Range Planning Committee of the NAACP Legal Defense & Educational Fund, June, 1998).

“A Question of Justice: African-American Legal Perspectives on the 1883 *Civil Rights Cases*,” 70 *Chicago-Kent Law Review* 1123 (1995).

“Breaking the Barriers of Access to Health Care: A Discussion of the Role of Civil Rights Litigation and the Relationship Between Burdens of Proof and the Experience of Denial,” 60 *Brooklyn Law Review* 239 (1994).

Public Speaking & Conference Participation

Broad experience presenting on an array of topics, including racial justice, environmental justice, environmental law, disability rights, political science, health care, public administration, and lawyering, including guest lectures and presentations at law schools, schools of public health, conferences, and meetings, including, for example:

“Marginalized by Meat: A Conversation with Professor Marianne Engelman Lado,” Yale Law School Environmental Law Association and Columbia Law School Environmental Law Society and Student Animal Legal Defense Fund (November 11, 2020).

“Environmental & Climate Justice: Anti-Racist Movements and Principles for Practice” Maine Law School (Panelist, October 26, 2020).

“Environmental Justice and the Latino Community: Why it Matters to Us,” Connecticut Commission on Women, Children, Seniors, Equity & Opportunity (Panelist, October 9, 2020).

“Federal and State Environmental Justice Legislation” and “EJ Legal Tools for Communities,” University of Maryland Environmental Justice Symposium (Panelist, September 26 and October 3, 2020).

“Pursuing Equal Protection: Shouldn’t Everyone Have Access to Fresh Air & Clean Water?,” Boston University School of Law (Research Colloquium Speaker, April 2, 2020).

“Climate Justice: Clinical Practice, Civil Rights & Equity at the State Level,” Loyola University of New Orleans College of Law (Panelist, March 6, 2020).

“Civil Rights Violations & the Social Determinants of Health: Combatting Environmental Justice,” University of Virginia School of Law conference, “Healing Hate: A Public Health Perspective on Civil Rights in America” (Panelist, January 30, 2020).

“No More Excuses: Building a New Vision of Civil Rights in the Environmental Justice Context,” Vermont Law School (Douglas Costle Lecture, November 6, 2019).

“Legal Frameworks for Addressing the Harms of Industrial Agriculture in the Context of the Struggle for Environmental Justice,” American Public Health Association Annual Meeting (Panelist, Philadelphia, PA, November 3, 2019).

Panelist at Congressional Convening on Environmental Justice (House Natural Resources

Committee, June 26, 2019), available at <https://bluevirginia.us/2019/06/video-rep-donald-mceachin-rep-raul-grijalva-host-first-of-its-kind-congressional-convening-on-environmental-justice>).

“Undivided Environmentalism,” Vermont Law School Emerging Environmental Law Curriculum Conference (Panelist, June 21, 2019).

“Development of an Administrative Complaint to Inpower Residents and Address Environmental Injustice: A Story of Three Communities” and “Title VI: A Tool for Environmental Justice,” 5th University of Maryland Symposium on Environmental Justice & Health Disparities (Panelist, College Park, MD, May 11, 2019).

“Justice Delayed, Justice Achieved: Seeking Environmental Justice Through Civil Rights Law,” 3rd Annual Environmental Law Symposium: Environmental Justice for Washington and Beyond, Univ. of Washington School of Law (Seattle, WA, November 2, 2018).

“Constitutional Arguments for Environmental (and Equal) Protection,” ABA SEER Fall Conference (Panelist, San Diego, CA, October 17, 2018).

“Collateral Damage: Factory Farming Impacts Beyond the Animals,” Animal Law Conference (Panelist, Chicago, IL, October 13, 2018).

“Representing Communities: Legal Strategies to Address Environmental Injustice,” Yale Young Global Scholars Program (Lecturer, New Haven, CT, July 12, 2018).

“Reclaiming the Legacy of Martin Luther King Jr.,” American Constitution Society National Convention (Plenary Panelist, Washington, D.C., June 9, 2018).

“Environmental Justice and the Devaluation of Human Life,” Dignity Rights and Environmental Justice Conference at Delaware Law School (Panelist, Wilmington, Delaware, April 13, 2018).

“No More Excuses: Building a Vision of Civil Rights Enforcement in the Context of Environmental Justice,” Yale School of Forestry & Environmental Studies Research Seminar Series (Speaker, New Haven, CT, February 14, 2018).

“Lawyering to Protect the Urban Environment,” Protecting the Urban Environment, Ninth Annual Environment, Energy & Natural Resources Symposium, Indiana University Robert H. McKinney School of Law (Lunch Address Keynote, Indianapolis, March 31, 2017).

“Finding Solid Ground: Environmental and Land Use Dispute Resolution in CT,” Quinnipiac University School of Law (Facilitator, Environmental Justice Breakout Session, New Haven, CT, March 17, 2017).

“Death by Discretion: Toxic Trespass, Human Rights & the Public Trust Doctrine,” Public Interest Environmental Law Conference (Panelist, Eugene, Oregon, March 4, 2017).

“Title VI, Environmental Justice and Affected Communities,” Vermont Law School Annual Solutions Conference (Panelist, South Royalton, VT, March 24, 2017).

“Legal Strategies to Ensure Environmental Justice: The Need for Civil Rights Enforcement,” Flint Environmental Justice Summit (Panelist, Flint Michigan, March 10, 2017).

“America’s Water Crisis: An Issue of Environmental Justice,” Fordham University, School of Law (Panelist, NY, February 10, 2017).

“Lessons from Flint: Using Federal and State Laws to Protect Our Communities,” NAACP National Conference CLE (Panelist, Cincinnati, Ohio, July 18 2016).

“Factory Farms and Environmental Justice,” Sustainable Agriculture & Food Systems Funders Conference (Lunchtime Panelist, Louisville, KY, June 30, 2016).

“Overcoming Corporate Threats to Academic and Community Health Research on Industrial Animal Production,” Association for Environmental Studies and Sciences (Panelist, Washington, D.C., June 9, 2016).

“Flint Water Crisis: A Drop in the Bucket of the History Between Flint and the EPA,” ABA Section of Civil Rights and Social Justice (Panelist, Teleconference, April 8, 2016).

“Civil Rights Law and Health,” Committee on Community Based Solutions to Promote Health Equity in the United States, the National Academies of Sciences, Engineering, Medicine (Speaker, Washington, D.C., March 7, 2016).

Testimony, Environmental Justice Hearing, U.S. Commission on Civil Rights (Panelist, Washington, D.C., February 5, 2016).

“Title VI of the Civil Rights Act: How Engagement with Environmental Justice Advocates Can Strengthen Civil Rights Enforcement – Effective Strategies for Working with Federal Civil Rights Offices and Recommendations for Improving the Use of Title VI to Address Environmental Justice Issues,” National Environmental Justice Conference and Training Program (Panelist, Washington, D.C., March 12, 2015).

“Case Studies: Using Title VI of the Civil Rights Act to Achieve Environmental Justice,” National Environmental Justice Conference and Training Program (Panelist, Washington, D.C. March 28, 2014).

“EPA, Environmental Justice and Title VI of the Civil Rights Act,” Public Interest Environmental Law Conference (Panelist, Eugene, Oregon, March 1, 2013).

“Environmental Justice,” Northeast Region of the National Black Law Student Association (NEBLSA) (Panelist, January 28, 2012).

“Federal Courts, Inc.?” American Constitution Society (ACS) (Panelist, New York, February 8, 2011).

“New Developments in Disability Rights Law,” Practicing Law Institute (PLI) (Panelist at Diversity CLE, New York, March 2, 2012, January 25, 2011, February 24, 2010).

“Disability Rights & Marginalization,” Third National People of Color Conference (Panelist, Newark, NJ, September 11, 2010).

“Supreme Court Update,” National Disability Rights Network Annual Conference (Speaker, June 8, 2010).

“The Use of International and Transnational Authorities: Ethical Obligations in the Context of Indeterminacy,” Ethics and Domestic Human Rights Lawyering, CLE (Panelist, June 4, 2010).

“Litigation as a Tool to Leverage Community Advocacy in the Access to Health Care Context,” Community Lawyering Conference, Southern Coalition for Social Justice (Keynote, Atlanta, GA, February 5, 2010).

Human Rights & Advocacy to Address Barriers of Access to Health Care, Human Rights Institute, Columbia Law School (Lunchtime Event Panelist, April 17, 2009).

Ex Parte Young: The Font of Federal Rights Enforcement, Law School Symposium, University of Toledo, College of Law (Panelist, March 20, 2009).

“Termination of Parental Rights,” TASC/P & A CAP Annual Conference, National Disability Rights Network (Panelist, June 3, 2008).

“E-Discovery,” TASC/P & A CAP Annual Conference, National Disability Rights Network (Panelist, June 4, 2008).

Supreme Court Roundup, Columbia Law School (Panelist, October 7, 2007 and in previous years).

“The Legal Landscape Today,” a part of “Beyond Diversity 101,” Practicing Law Institute (Panelist, October 3, 2006).

“Awakening from the Dream: Civil and Human Rights Under Siege and the New Struggle for Equal Justice,” Litigation and Advocacy Directors Conference, National Legal Aid & Defender Association (Plenary Panelist, June 4, 2006).

“Health Care and Civil Rights,” CLE Seminar at NAACP Conference (Panelist, July 10, 2005).

“Rebellious Lawyering in the Age of the Rollback,” 10th Annual Rebellious Lawyering Conference (Opening Address, February 20, 2004).

Media Experience

Wide ranging experience with print, radio, television and online media, including, for example, interviews with Dylan Matthews and Byrd Pinkerton, Future Perfect, for “Why North Carolina Has Giant Lagoons of Pig Poop (Sept. 16, 2020), <https://www.vox.com/future-perfect/2020/9/16/21430837/future-perfect-podcast-season-3-north-carolina-cafo-pig-farm>; Sharon Lerner, The Intercept, for “What Racism Smells Like: Ravaged by Covid-19, Polluted Communities Demand Environmental Justice (August 8, 2020); <https://theintercept.com/2020/08/08/coronavirus-pollution-environmental-justice-racism/>; McNair Ezzard, A Better World, WPVM (Feb. 2, 2017, Show #35), <https://wpvmfm.org/show/a-better-world/>; Rachel Leven, Bloomberg BNA for “The Flint Water Crisis and Civil Rights” (July 12, 2016), <http://www.bna.com/flint-water-crisis-b73014444109/>; Kendra Pierre-Louis, Inside Climate News for “The Alabama Landfill That Brought Noise, Health Woes, and a Lawsuit” (July 5, 2016), <https://insideclimatenews.org/news/29062016/alabama-landfill-brought-noise-health-woes-and-lawsuit>; NBCBLK (Aug. 5, 2015) (EPA’s record on civil rights enforcement), <http://www.nbcnews.com/news/nbcblk/epa-environmental-injustice-uniontown-n402836>; KUAF National Public Radio (May 5, 2015) (coverage of the Buffalo River case), <http://kuaf.com/post/departments-justice-drops-appeal-federal-ruling-against-ozarks-swine-cafo-financials>; Reuters (May 1, 2015), <http://www.reuters.com/article/2015/05/01/usa-environment-hogs-idUSL1N0XS0G02015050>; Al Jazeera English (October, 2010).

Languages

Reading knowledge of Spanish.

References available upon request.

Rosemary Enobakhare

(b) (6)

WORK EXPERIENCE

The Hub Project

Director of Campaigns

January 2017 – Present
Washington, DC

- Develop and manage large-scale advocacy campaigns that shift the conversation around top progressive policies
- Oversee all aspects of campaign planning and implementation including campaign conception, research, assessment and analysis, plan development, and management
- Support and manage the development and production of campaign materials
- Coordinate the strategy between departments including Political, Field, Data, Communications, Legal, and Research on the implementation and execution of new campaigns
- Design and run paid media programs on tv, radio, and digital platforms
- Lead, manage and inspire a growing advocacy team, including conducting weekly check-ins, performance reviews, and other managerial tasks
- Serve as the organizational representative to the media on advocacy issues
- Build and manage reflective and equitable state and national networks and partnerships
- Oversee a 5 million dollar campaign budget
- Manage a 25 person team of communications, research, and digital staff

Clean Water for All Campaign

Campaign Director

April 2017 – January 2019
Washington, DC

- Oversaw all aspects of the campaign's daily operations and serve as the principal point of contact for campaign members, stakeholders and donors
- Guided the strategic, financial, policy, and operational oversight of a national federal water advocacy campaign.
- Created and effectively communicated the campaign's strategic plan encompassing policy, messaging, and grassroots strategies, to campaign partners and funders
- Developed and implemented internal policies governing the work of the campaign and improving overall operations
- Oversaw 1.8 million dollar campaign budget
- Identified new funding opportunities, write grant proposals, prepare grant reports and track reporting requirements/deadlines
- Provided consistent and comprehensive updates on campaign activities including progress to goals and funding
- Hired and supervised vendors, consultants and other service providers
- Oversaw the production and sourcing of all campaign materials for internal and external use
- Ensured all campaign activities adhere to State and federal regulation, compliance and reporting
- Guided and shaped allocation and deployment of campaign resources
- Managed the strategic planning and priority setting process for the campaign

United States Environmental Protection Agency (EPA)

Deputy Associate Administrator for Public Engagement and Environmental Education

September 2015 – January 2017
Washington, DC

- Led EPA's community outreach department and development of the Agency's strategic engagement plans to partner with third party stakeholders to positively impact EPA's public policy and reputational goals
- Drafted and distributed external media and public relations materials, including fact sheets, op-eds, press releases and other statements for the record
- Generated op-ed and thought leadership positioning pieces for placement in various media platforms and publications
- Developed and implemented effective media and public engagement strategies in conjunction with other senior EPA officials to promote agency rule proposals, administrative initiatives and accomplishments
- Established and maintained working relationships with key external organizations and community leaders to advance EPA's mission through formal collaborations, stakeholder communication vehicles, conferences and other related mediums
- Ensured EPA constituency outreach plans are aligned with engagement activities of agency principals including the EPA Administrator, Deputy Administrator, Assistant Administrators, Regional Administrators, and Associate Administrators

- Managed an 18-person staff responsible for initiating and managing cooperative engagement and environmental education activities among external organizations and the EPA

United States Environmental Protection Agency (EPA)

Deputy Director of Public Engagement and Faith Based Initiatives

August 2013 – September 2015
Washington, DC

- Managed a multifaceted outreach portfolio of national stakeholders with specific focus on Women, African Americans, Faith and the Business community
- Researched, composed and distributed public engagement materials, including fact sheets, op-eds, speeches, press releases and other statements for the record
- Facilitated inter-agency partnerships around President Obama's Climate Action Plan
- Collaborated with EPA Office of Public Affairs and Program Offices to develop and implement effective media strategies to promote President Obama's Climate Action Plan and EPA regulations around the Clean Water Act and the Clean Air Act

Democratic National Committee (DNC)

National African American Outreach Director

February 2012-August 2013
Washington, DC

- Developed, maintained, and coordinated effective relationships among national African American grassroots leaders to engage them around the 2012 election
- Prepared and managed the budget for the DNC's participation around National African American Conferences, community events and HBCU summits
- Organized and executed African American programming during the 2012 Democratic National Convention
- Researched and drafted speeches, briefings, and talking points on the Administration's African American specific accomplishments
- Managed day-to-day operations for the DNC Black Caucus, and served as a liaison between the caucus and DNC leadership

Organizing for America-North Carolina

State Deputy Paid Canvass Director

September 2012-November 2012
Charlotte, NC

- Recruited and trained over 200 individuals to go door-to-door to educate and gather data from voters about the election
- Managed team leads and paid canvassers; set and enforced their performance and data collection standards to meet voter contact benchmarks and metrics
- Created all training materials and personnel-related documents to ensure optimal efficiency
- Used the North Carolina Voter Activation Network to build lists, create maps, and track data
- Managed the canvass payroll

Democratic National Committee (DNC)

National African American Outreach Coordinator

August 2011-February 2012
Washington, DC

- Assisted the National African American Outreach Director in facilitating programming for Democratic state parties
- Provided written reports on program metrics and outcomes while tracking various components to ensure targeted goals were achieved
- Supported Obama for America's National African American Vote Director in developing and executing African Americans for Obama programming in targeted states
- Facilitated meetings and conference calls with key national and state leadership

Democratic National Committee (DNC)

Constituent Services Staff Assistant and Executive Assistant to the Director of Hispanic Outreach

August 2008-August 2011
Washington, DC

- Researched and wrote correspondence on core issues
- Served as field organizer for congressional, senatorial, and presidential campaigns during election seasons
- Provided administrative support including coordinating travel arrangements, scheduling, and budget planning
- Coordinated media buying during campaign season for targeted constituency groups

EDUCATION

Spelman College

Bachelor of Arts, Economics

Atlanta, GA

PHILIP M. FINE, Ph.D.

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SUMMARY

- **An internationally-recognized expert on air quality science and policy**
- **Deep and broad experience in developing science-based policies to reduce emissions of air pollutants and protect public health**
- **First-hand, practical expertise with the federal Clean Air Act and its implementation in the most challenging non-attainment area in the nation**
- **A proven record of achievement, working productively with all stakeholders by fostering relationships and building consensus to achieve public health goals**
- **Demonstrated success in engaging underserved communities to address their environmental justice concerns by developing and implementing concrete plans for action.**
- **Proficiency in communicating with elected officials at local, state, and federal levels on environmental issues to address constituent concerns and to provide support for legislative actions**
- **An effective manager of personnel and budgets, with a focus on career development, inclusion, diversity, responsibility, efficiency and outcomes**

WORK EXPERIENCE

South Coast Air Quality Management District

2006 - Present

As *Deputy Executive Officer* (2015 – present) for Planning, Rules & Area Sources, responsible for oversight and direction of all operational and administrative functions of a Division with more than 145 staff positions and an annual budget of approximately \$25 million. Division activities include rulemaking, emissions inventory, toxics programs, CEQA, Economic assessments, SIP development, meteorology, forecasting, air quality modeling, data analysis, and transportation programs. Oversees implementation of California's landmark Environmental Justice program, AB617, by developing emission reduction plans in the area's most disadvantaged communities. Represents the District in frequent public hearings and workshops, meetings with public officials and community groups, stakeholder working groups, state legislative committees, and scientific conferences. Provides advice and consultation to the Executive Officer, Governing Board Members, and other elected officials on a wide range of technical and policy issues.

As *Assistant Deputy Executive Officer* (2014 – 2015) for Planning, Rules & Area Sources, was responsible for oversight, administration, and direction of VOC and particulate matter rulemaking and control strategies, PM annual emissions inventory reporting, AB2588 air toxics program, air quality management plans and SIP development, meteorology and forecasting, and air quality modeling and data analysis.

As *Assistant Deputy Executive Officer* (2013 – 2014) for Science & Technology Advancement, was responsible for oversight, administration, and direction of the Monitoring and Analysis Division, which included over 100 staff members in Ambient Measurements, Laboratory Services, and Source Testing. Communicated results and implications of air quality measurements to the Executive Officer, SCAQMD Board Members, elected officials, and the public.

As *Planning and Rules Manager* (2011 – 2013), oversaw several planning, reporting, policy and rule-making functions including climate change and energy policy, particulate matter control strategies, annual emissions inventory reporting, AB2588 air toxics program, air quality management plan and SIP development, meteorology and forecasting, and air quality data analysis. Managed approximately 30 professional staff in these areas. Developed and administered the proposal and implementation process for a \$53 million grant program to achieve emissions reductions in the Coachella Valley. Led the development and completion of the 2012 Air Quality Management Plan and the Lead (Pb) State Implementation Plan (SIP) for Los Angeles County that demonstrate attainment with revised federal air quality standards.

As *Atmospheric Measurements Manager* (2006 - 2011), oversaw all aspects of air monitoring and data collection in the Los Angeles Air Basin, including over 35 air monitoring network sites, numerous special projects, emergency response, and data validation and reporting. Managed a staff of over 45 air quality instrument technicians and data analysts, and created annual budgets for multiple monitoring programs. Worked closely with state and federal agencies, elected officials and community organizations. Assisted other AQMD divisions with issues related to compliance, rule-making, modeling and planning.

University of Southern California, Los Angeles, California

2002 - 2006

As *Research Assistant Professor*, engaged in cutting-edge air quality research, primarily in the areas of atmospheric chemistry and physics of particulate matter, measurement instrumentation, and exposure assessment for health effects studies. Analyzed data from a novel size-fractionated continuous fine particle nitrate monitor and prepared results for publication. Designed and conducted a study to measure individual primary and secondary organic compounds present in ambient ultrafine particles on short time scales and at different Southern California sampling sites. Analyzed data from on-going Southern California Supersite project and supervised the preparation of numerous manuscripts accepted for publication. Continued the development and testing of an electrostatic filter designed for the control of ultrafine particle emissions from major sources. Designed, built and tested improved fine particle concentration systems for use in ambient sampling, in vitro and in vivo health exposure studies. Provided support for health effects investigators by collecting ambient particulate matter samples for subsequent toxicity assays. Successfully managed an extensive sampling campaign in Mexico City to collect particle samples for in vitro toxicity testing. Evaluated a personal continuous particle monitor for use in future epidemiological panel studies. Initiated the development of a multi-purpose fully automated particle concentrator that will be deployed for the unattended collection of in vitro samples and used to increase the sensitivity of current particle mass spectrometry technologies.

Prepared or assisted in the preparation of several research proposals. Supervised several graduate students and technicians on numerous research projects. Served on several Ph.D. thesis proposal and defense committees.

California Institute of Technology, Pasadena, California

1995 – 2002

As *Graduate Student Researcher*, designed, planned, and conducted emissions testing experiments to fully characterize the fine particle emissions from a variety of biomass combustion sources including fireplaces and wood stoves. Analyzed fine particle samples for chemical composition using several advanced analytical techniques including gas chromatography/mass spectrometry (GC/MS). Used chemical mass balance receptor modeling to determine the contribution of biomass combustion to ambient fine particle levels throughout the United States.

Prepared the successful research grant application to the U.S. EPA resulting in complete funding for doctoral thesis research.

Performed additional emissions testing to aid in the assessment of the effects of indoor candle burning on the soiling of interior surfaces within historical churches. Participated in several field sampling campaigns, including both indoor and outdoor air quality studies. Provided technical support and maintenance for GC/MS instrumentation.

Pacific Environmental Services, Inc., Baldwin Park, California

1994 – 1995

As *Environmental Engineering Consultant*, performed numerous air emissions source tests for industrial clients using EPA methodology. Compiled air emissions inventories for government installations via extensive record review and personnel interviews. Prepared Title V permit applications for a variety of

industrial sources. Produced written reports for submission to state and local regulatory agencies, including a complete Storm Water Pollution Prevention Plan for a local U. S. Air Force base.

Lawrence Berkeley Laboratory, Berkeley, California

1991 – 1993

Engaged in various team and individual research projects for the design and manufacture of semiconductor radiation detectors. Performed chemical and mechanical processing of semiconductor devices. Presented research results in oral and written summary reports.

EDUCATION

California Institute of Technology, Pasadena, California

Ph.D., Environmental Science & Engineering, January 2002

Masters of Science, Environmental Engineering Science, June 1997

Minor in Art History

Doctoral Thesis: *The Contribution of Biomass Combustion to Ambient Fine Particle Concentrations in the United States*

Advisor: Dr. Glen R. Cass

University of California, Berkeley, California

B.S., Mechanical Engineering/Materials Science and Engineering, with Highest Honors, May 1993

Minor in Classical Civilization

Mary C. and William G. Drake Scholar

OTHER EDUCATIONAL EXPERIENCE

University of Southern California, Los Angeles, California

2004 – 2005

As *Research Assistant Professor*, taught graduate level courses in “Environmental Pollution: Monitoring and Risk Assessment” and “Air Pollution Fundamentals.”

California Science Fair, Los Angeles, California

1998 – present

As *Director of Judging* (2006-present), shared responsibility for all aspects of judging middle school and high school student projects. Served as a *Category Chairperson* (2000-2005), a member of the *Abstract Review Committee* (2000-2001), a member of the *Judges Action Committee* (2004-2005), and as a *Category Judge* (1998-2005).

Caltech Pre-College Science Initiative, Pasadena, California

1999 – 2001

As a *Curriculum Developer*, designed inquiry-based science curricula for Pasadena high schools on the subject of the global carbon cycle and climate change. Prepared instructional materials and teaching manuals as part of a team comprised of scientists and high school teachers.

PROFESSIONAL AFFILIATIONS/SERVICE

Research Screening Committee, California Air Resources Board, 2013 - present

NOx Review Panel of the U.S. Environmental Protection Agency Clean Air Scientific Advisory Committee, 2013

Panelist, Kickoff Workshop to Inform EPA’s Review of the Primary National Ambient Air Quality Standards for Nitrogen Dioxide, 2012

Air Monitoring and Methods Subcommittee of the U.S. Environmental Protection Agency Clean Air Scientific Advisory Committee, 2011

Advisory Committee, Port of Long Beach Mitigation Grant Programs, 2010-2013

Project Panel, Airport Cooperative Research Program, Transportation Research Board, National Research Council, 2010-present

Technical Program Committee, Air & Waste Management Association Symposium on Air Quality Measurement Methods and Technology, November, 2010

American Association for Aerosol Research - Session Chairperson, AAAR 2000, 2001, 2004 conferences

Member of the Air & Waste Management Association

U. S. EPA/NACAA Monitoring Steering Committee, 2007-2012

External Scientific Advisory Committee, MESA Air Study, University of Washington, 2005-present

External Advisory Committee, NIEHS P01 Grant, University of Southern California, 2006-2011

Advisory Board, University of Southern California Department of Civil and Environmental Engineering, 2011-2015
 NSF Workshop – Emerging Issues in Nanoparticle Aerosol Science and Technology - contributing author to the final report, 2003
 U.S. EPA STAR Grant Program – Peer Review Panels, 2003, 2004, 2006, 2007, and 2010
 Reviewed over 55 manuscripts for scientific journals, including *Aerosol Science & Technology*, *Environmental Science & Technology*, *Atmospheric Environment*, *Journal of the Air and Waste Management Association*, *Journal of Geophysical Research*, *Journal of Exposure Analysis and Environmental Epidemiology*, *Aerosol and Air Quality Research*, *Journal of Aerosol Science*, *Science of the Total Environment*, *Atmospheric Chemistry and Physics*, *Indoor Air*, *Human & Ecological Risk Assessment*, *Environmental Engineering Science*, *Environmental Reviews*, *Environmental Pollution*, *Air Quality*, *Atmosphere & Health*, and *Journal of Environmental Management*.
 Reviewed research proposals for National Science Foundation, Natural Environment Research Council (UK), California Air Resources Board, and University of Singapore

RESEARCH GRANTS

Co-principal Investigator “Engage, Educate, and Empower California Communities on the Use and Applications of ‘Low-cost’ Air Monitoring Sensors”
 \$749,820, May 2016 - April 2019
 Environmental Protection Agency, National Center for Environmental Research STAR Program

Principal Investigator, “A Simple, Low-Cost Beta Attenuation Monitor (BAM) for Continuous Measurement of PM₁₀, PM_{2.5} or Ultrafine Particle Concentrations”
 \$143,830, June 2003 – June 2005
 Innovative Clean Air Technology Program, California Air Resources Board.

Co-principal Investigator, (Henry P.I., USC) “New Technologies for Source Apportionment”
 \$450,000, February 2005 – January 2008
 Environmental Protection Agency, National Center for Environmental Research STAR Program.

Co-principal Investigator, (Sioutas P.I., USC) “An Automated Aerosol Concentration System for the Collection of Suspended Particulate Matter in Aqueous Solutions Suitable for Toxicological Assays.”
 \$214,195, December 2003 – November 2005
 Asthma Consortium, South Coast Air Quality Management District.

Investigator, (Delfino P.I., UC Irvine) “Ultrafine PM and Cardiorespiratory Health”
 \$2,817,789 (USC School of Engineering Share: \$715,000), December 2003 – November 2008
 National Institute of Environmental Health Sciences (NIEHS-NIH).

SELECTED PUBLICATIONS

Epstein, S. A.; Lee, S.; Katzenstein, A. S.; Carreras-Sospedra, M.; Zhang, X.; Farina, S. C.; Vahmani, P.; **Fine, P. M.**; Ban-Weiss, G. “Air-quality implications of widespread adoption of cool roofs on ozone and particulate matter in southern California.” *Proceedings of the National Academy of Sciences of the United States of America*, **114** (34), 8991-8996, 2017.

Fine, P. M.; Polidori, A. “Designing a Sensor Information Clearinghouse” *EM Magazine*, 28-31, August 2014

Short, D.; Giordano, M.; Zhu, Y.; **Fine, P. M.**; Polidori, A.; Asa-Awuku, A. “A Unique Online Method to Infer Water-Insoluble Particle Contributions.” *Aerosol Science and Technology*, **48**:7, 706-714, 2014

Polidori, A.; **Fine, P. M.**; White V.; Kwon, P. S. “Pilot Study of High-Performance Air Filtration for Classroom Applications.” *Indoor Air*, **23**, 185-195, 2013.

Lee, E. S.; Polidori, A.; Koch, M.; **Fine, P. M.**; Mehadi, A.; Hammond, D.; Wright, J. N.; Miguel, A. H.; Ayala, A.; Zhu, Y. “Water-based Condensation Particle Counters Comparison Near a Major Freeway with Significant Heavy-duty Diesel Traffic.” *Atmospheric Environment*, **68**, 151-161, 2013.

Watson, J. G.; Chow, J. C.; Chen, L.; Wang, X.; Merrifield, T. M.; **Fine, P. M.**; Barker, K. “Measurement System Evaluation for Upwind/Downwind Sampling of Fugitive Dust Emissions.” *Aerosol and Air Quality Research*, **11**, 331-350, 2011.

Agrawal, H.; Eden, R.; Zhang, X.; **Fine, P. M.**; Katzenstein, A.; Miller, J. W.; Ospital, J.; Teffera, S.; Cocker, J. R. "Primary Particulate Matter from Ocean-Going Engines in the Southern California Air Basin." *Environmental Science and Technology*, **43** (14), 5398–5402, 2009.

Krudysz, M. A.; Dutton, S. J.; Brinkman, G. L.; Hannigan, M. P.; **Fine, P. M.**; Sioutas, C.; Froines, J. R. "Intra-community Spatial Variation of Size-fractionated Organic Compounds in Long Beach, CA." *Air Quality, Atmosphere and Health*, **2** (2), 69-88, 2009.

Kleeman, M. J.; Riddle, S. G.; Robert, M. A.; Jakober, C. A.; **Fine, P. M.**; Hays, M. D.; Schauer, J. J.; Hannigan, M. P. "Source Apportionment of Fine (PM_{1.8}) and Ultrafine (PM_{0.1}) Airborne Particulate Matter During a Severe Winter Pollution Episode." *Environmental Science and Technology*, **43** (2), 272-279, 2009.

Krudysz, M. A.; Froines, J. R.; **Fine, P. M.**; Sioutas, C. "Intra-community Spatial Variation of Size-fractionated PM Mass, OC, EC and Trace Elements in the Long Beach, CA Area." *Atmospheric Environment*, **42** (21), 5374-5389, 2008.

Majestic, B. J.; Schauer, J. J.; Shafer, M. M.; **Fine, P. M.**; Singh, M.; Sioutas, C. "Trace Metal Analysis of Atmospheric Particulate Matter: A Comparison of Personal and Ambient Samplers." *Journal of Environmental Engineering and Science*, **7** (4), 289-298, 2008.

Kleeman, M. J.; Robert, M. A.; Riddle, S. G.; **Fine, P. M.**; Hays, M. D.; Schauer, J. J.; Hannigan, M. P. "Size Distribution of Trace Organic Species Emitted from Biomass Combustion and Meat Charbroiling." *Atmospheric Environment*, **42** (13), 3059-3075, 2008.

Westerdahl, D.; Fruin, S.; **Fine, P. M.**; Sioutas, C. "The Los Angeles International Airport as a Source of Ultrafine Particles and Other Pollutants to Nearby Communities." *Atmospheric Environment*, **42** (13), 3143-3155, 2008.

Kim Y. H.; **Fine, P.**; Sioutas, C.; Shing K. S. "Effect of Albumin on Aerosol Properties of Inhaled Drug Particles Produced by Supercritical Fluids Technology." *Powder Technology*, **182** (3), 354-363, 2008.

Fine, P. M.; Solomon, P.; Sioutas, C. "Secondary Particulate Matter in the United States: Insights from the Particulate Matter Supersites Program and Related Studies." *The Journal of the Air and Waste Management Association*, **58**, 234-253, 2008.

Fruin, S.; Westerdahl, D.; Sax, T.; **Fine P. M.**; Sioutas C. "Measurements and Predictors of On-Road Ultrafine Particle Concentrations and Associated Pollutants for Freeways and Arterial Roads in Los Angeles." *Atmospheric Environment*, **42** (2), 207-219, 2008.

Phuleria, H. C.; Sheesley, R.; Schauer, J. J.; **Fine, P. M.**; Sioutas, C. "Roadside measurements of size-segregated particulate organic compounds near gasoline and diesel dominated freeways in Los Angeles, CA" *Atmospheric Environment*, **41** (22), 4653-4671, 2007.

Arellanes, C.; Paulson, S. E.; **Fine, P. M.**; Sioutas, C. "Exceeding of Henry's Law by Hydrogen Peroxide Associated with Urban Aerosols" *Environmental Science and Technology*, **40** (16), 4859-4866, 2006.

De Vizcaya-Ruiz, A.; Gutiérrez-Castillo, M. E.; Uribe-Hernández, M.; Cebrián, M. E.; Mugica-Alvarez, V.; Sepúlveda, J.; Rosas, I.; Salinas, E.; García-Cuellar, C.; Martínez, F.; Alfaro-Moreno, E.; Torres-Flores, V.; Osornio-Vargas, A.; Sioutas, C.; **Fine, P. M.**; Singh, M.; Geller, M. D.; Kuhn, T.; Eiguren-Fernandez, A.; Miguel, A.; Schiestl, R.; Reliene, R.; Froines, J. "Characterization and In Vitro Biological Effects of Concentrated Particulate Matter from Mexico City." *Atmospheric Environment*, **40** (S2), S583-S592, 2006.

Phuleria, H. C.; Geller, M. D.; **Fine, P.M.**; Sioutas, C. "Size-Resolved Emissions of Organic Tracers from Light- and Heavy-Duty Vehicles Measured in a California Roadway Tunnel" *Environmental Science and Technology*, **40** (13), 4109-4118, 2006.

Majestic, B. J.; Schauer, J. J.; Shafer, M. M.; Turner, J.; **Fine, P. M.**; Singh, M.; Sioutas, C. "Development of a Wet Chemical Method for the Speciation of Iron in Atmospheric Aerosols." *Environmental Science and Technology*, **40** (7), 2346-2351, 2006.

Arhami, M.; Kuhn, T.; **Fine, P. M.**; Delfino, R. J.; Sioutas, C. "Effects of Sampling Artifacts and Operating Parameters on the Performance of a Semi-continuous Particulate EC/OC Monitor." *Environmental Science and Technology*, **40** (3), 945-954, 2006.

- Staimer, N.; Delfino, R. J.; Bufalino, C.; **Fine, P. M.**; Sioutas, C.; Kleinman, M. T. "A Miniaturized Active Sampler for the Assessment of Personal Exposure to Nitrogen Dioxide." *Analytical and Bioanalytical Chemistry*, **383** (6), 955-962, 2005.
- Hays, M. D.; **Fine, P. M.**; Geron, C. D.; Kleeman, M. J.; Gullett, B. K. "Open Burning of Agricultural Biomass: Physical and Chemical Properties of Particle-Phase Emissions." *Atmospheric Environment*, **39** (36), 6747-6764, 2005.
- Geller, M. D.; Sardar, S. B.; Phuleria, H.; **Fine, P. M.**; Sioutas, C. "Measurements of Particle Number and Mass Concentrations and Size Distributions in a Tunnel Environment." *Environmental Science and Technology*, **39**, 8653-8663, 2005.
- Geller, M. D.; Biswas, S.; **Fine, P. M.**; Sioutas, C. "A New Compact Aerosol Concentrator for Use in Conjunction with Low Flow-Rate Continuous Aerosol Instrumentation." *Journal of Aerosol Science*, **36**, 1006-1022, 2005.
- Miguel, A. H.; Eiguren-Fernandez, A.; Sioutas, C.; **Fine, P. M.**; Geller, M.; Mayo, P. R. "Observations of Twelve US EPA Priority Polycyclic Aromatic Hydrocarbons In the Aitken Size Range (10-32nm Dp)." *Aerosol Science and Technology*, **39**, 415-418, 2005.
- Biswas, S.; **Fine, P. M.**; Geller, M. D.; Hering, S. V.; Sioutas, C. "Performance Evaluation of a Recently Developed Water-Based Condensation Particle Counter." *Aerosol Science and Technology*, **39**, 419-427, 2005.
- Westerdahl, D.; Fruin, S.; Sax, T.; **Fine, P. M.**; Sioutas, C. "Mobile Platform Measurements of Ultrafine Particles and Associated Pollutant Concentrations on Freeways and Residential Streets in Los Angeles." *Atmospheric Environment*, **39** (20), 3597-3610, 2005.
- Khlystov, A.; Zhang, O.; Jimenez, J.-L.; Stanier, C.; Pandis, S. N.; Canagaratna, M. R.; **Fine, P.**; Misra, C.; Sioutas, C. "In-Situ Concentration of Semi-volatile Aerosol Using Water-Condensation Technology." *Journal of Aerosol Science*, **36**, 866-880, 2005.
- Kuhn, T.; Biswas, S.; **Fine P. M.**; Geller, M. G.; Sioutas, C. "Physical and Chemical Characteristics and Volatility of PM in the Proximity of a Light-Duty Vehicle Freeway." *Aerosol Science and Technology*, **39**, 347-357, 2005.
- Kuhn, T.; Krudysz, M.; Zhu, Y.; **Fine, P. M.**; Hinds, W. C.; Froines, J.; Sioutas, C. "Volatility of Indoor and Outdoor Ultrafine Particulate Matter Near a Freeway." *Journal of Aerosol Science*, **36**, 291-302, 2005.
- Zhao, Y.; Bein, K. J.; Wexler, A. S.; Misra, C.; **Fine, P. M.**; Sioutas, C. "Field Evaluation of the Versatile Aerosol Concentration Enrichment System (VACES) particle concentrator Coupled to the Rapid Single-Particle Mass Spectrometer (RSMS-3)." *Journal of Geophysical Research - Atmospheres*, **110** (D07), D07S02, 2005.
- Phuleria, H. C.; **Fine, P. M.**; Zhu, Y.; Sioutas, C. "Air Quality Impacts of the October 2003 Southern California Wildfires." *Journal of Geophysical Research - Atmospheres*, **110** (D07), D07S20, 2005.
- Sardar, S. B.; **Fine, P. M.**; Mayo, P. R.; Sioutas, C. "Size-Fractionated Measurements of Ambient Ultrafine Particle Chemical Composition in Los Angeles Using the NanoMOUDI." *Environmental Science and Technology*, **39**, 932-944, 2005.
- Sardar, S. B.; **Fine, P. M.**; Sioutas, C. "Seasonal and Spatial Variability of the Size-Resolved Chemical Composition of Particulate Matter (PM₁₀) in the Los Angeles Basin." *Journal of Geophysical Research - Atmospheres*, **110** (D07), D07S08, 2005.
- Fine, P. M.**; Cass, G. R.; Simoneit B. R. T. "Chemical Characterization of Fine Particle Emissions from the Wood Stove Combustion of Prevalent United States Tree Species." *Environmental Engineering Science*, **21** (6), 705-721, 2004.
- Geller, M. D.; **Fine, P. M.**; Sioutas, C. "The Relationship between Real-time and Time-integrated Coarse (2.5 – 10 μm), Intermodal (1 – 2.5 μm), and Fine (< 2.5 μm) Particulate Matter in the Los Angeles Basin." *The Journal of the Air and Waste Management Association*, **54**, 1029-1039, 2004.
- Hering, S.; **Fine, P. M.**; Sioutas C.; Jaques, P. A.; Ambs, J. L.; Hogrefe, O.; Demerjian, K. L. "Field Assessment of the Dynamics of Particulate Nitrate Vaporization Using Differential TEOM® and Automated Nitrate Monitors." *Atmospheric Environment*, **38** (31), 5183-5192, 2004.

- Sardar, S. B.; **Fine, P. M.**; Hoon, A.; Sioutas, C. "Associations Between Particle Number and Gaseous Co-Pollutant Concentrations in the Los Angeles Basin." *The Journal of the Air and Waste Management Association*, **54**, 992-1005, 2004.
- Chakrabarti, B.; **Fine, P. M.**; Delfino, R.; Sioutas, C. "Performance Evaluation of an active personal DataRAM PM_{2.5} mass monitor (Thermo Anderson pDR-1200) designed for continuous personal exposure measurements." *Atmospheric Environment*, **38** (20), 3329-3340, 2004.
- Fine, P. M.**; Shen, S.; Sioutas, C.; "Inferring the Sources of Fine and Ultrafine Particulate Matter at Downwind Receptor Sites in the Los Angeles Basin Using Multiple Continuous Measurements." *Aerosol Science and Technology*, **38** (Supplement 1), 182-195, 2004.
- Fine, P. M.**; Cass, G. R.; Simoneit, B. R. T. "Chemical Characterization of Fine Particle Emissions from the Fireplace Combustion of Wood Types Grown in the Midwestern and Western United States." *Environmental Engineering Science*, **21** (3), 387-409, 2004.
- Fine, P. M.**; Chakrabarti, B.; Krudysz, M.; Schauer, J. J.; Sioutas, C. "Diurnal Variations of Individual Organic Compound Constituents of Ultrafine and Accumulation Mode PM in the Los Angeles Basin." *Environmental Science and Technology*, **38** (5), 1296-1304, 2004.
- Misra, C.; **Fine, P. M.**; Singh, M.; Sioutas, C. "Development and Evaluation of a Compact Facility for Exposing Humans to Concentrated Ambient Ultrafine Particles." *Aerosol Science and Technology*, **38**, 27-35, 2004.
- Fine, P. M.**; Jaques, P. A.; Hering, S. V.; Sioutas, C. "Performance Evaluation and Use of a Continuous Monitor for Measuring Size-Fractionated PM_{2.5} Particulate Nitrate." *Aerosol Science and Technology*, **37**, 342-354, 2003.
- Fine, P. M.**; Cass, G. R.; Simoneit, B. R. T. "Organic Compounds in Biomass Smoke from Residential Wood Combustion: Emissions Characterization at a Continental Scale." *Journal of Geophysical Research - Atmospheres*, **107** (D21), ICC-11, 2002.
- Fine, P. M.**; Cass, G. R.; Simoneit, B. R. T. "Chemical Characterization of Fine Particle Emissions from the Fireplace Combustion of Woods Grown in the Southern United States." *Environmental Science and Technology*, **36** (7), 1442-1451, 2002.
- Tesfaigzi, Y.; Singh, S.; Foster, J. E.; Kubatko, J.; Barr, E. B.; **Fine, P. M.**; McDonald, J. D.; Hahn, F. F.; Mauderly, J. L. "Health Effects of Subchronic Exposure to Low Levels of Wood Smoke in Rats." *Toxicological Sciences*, **65** (1), 155-125, 2002.
- Fine, P. M.**; Cass, G. R.; Simoneit, B. R. T. "Chemical Characterization of Fine Particle Emissions from the Fireplace Combustion of Woods Grown in the Northeastern United States." *Environmental Science and Technology*, **35** (13), 2665-2675, 2001.
- Fine, P. M.**; Cass, G. R.; Simoneit, B. R. T. "Characterization of Fine Particle Emissions from Burning Church Candles." *Environmental Science and Technology*, **33** (14), 2352-2362, 1999.
- Derhacopian, N.; **Fine, P.**; Walton, J. T.; Wong, Y. K.; Rossington, C. S.; Luke, P. N. "Determination of Surface Recombination Velocity and Bulk Lifetime in Detector-Grade Silicon and Germanium Crystals." *IEEE Transactions on Nuclear Science*, **41** (4), 1026-1030, 1994.
- Rossington, C. S.; **Fine, P. M.**; Madden, N. W. "Large-Area, Low Capacitance Si(Li) Detectors for High-Rate X-ray Applications." *IEEE Transactions on Nuclear Science*, **40** (4), 354-359, 1993.

SELECTED INVITED PRESENTATIONS

- "Measurement and Control of Ultrafine Particles." Invited Speaker, 10th Annual Air Quality and Health Workshop – Ultrafine Particles, The Lung Association British Columbia, February 20, 2013, Vancouver, BC, Canada
- "South Coast AQMD Air Quality Studies at Santa Monica Airport." Invited Speaker, Airports Council International – North America Environmental Affairs Committee Conference, April 17, 2012, Las Vegas, NV

“Community-Based Air Monitoring in the South Coast Air Basin.” Invited Speaker, Apps and Sensors for Air Pollution (ASAP) Workshop, U.S. EPA, March 27, 2012, Research Triangle Park, NC

“Atmospheric Monitoring of Ultrafine Particles.” Invited Speaker, Bay Area AQMD Advisory Council Meeting: Ultrafine Particles, February 8, 2012, San Francisco, CA

“Near Roadway Exposures.” Invited Speaker, Breathe LA Green Salon Series - How Close to Traffic Should We Live? Research and Policies for Healthier Communities, September 22, 2011, Los Angeles, CA

“Community-Based Air Monitoring in the South Coast Air Basin.” Invited Speaker, NACAA Fall Membership Meeting, October 20, 2010, Washington, DC

“Near Roadway Particulate Exposures.” Invited Speaker, New Perspectives on Community Health and Air Quality Conference, SCAQMD, July 24, 2009, Los Angeles, California

“Overview of Results from the Multiple Air Toxics Exposure Study – III.” Invited Speaker, National Air Quality Conference, U.S. EPA, April 6 – 9, 2008, Portland, Oregon

“Personal Monitoring for Air Pollution Exposure.” Invited Speaker, Health Impacts of Air Pollution on Communities, CAPCOA, September 19, 2007, Carson, California

“Community Air Toxics Monitoring – General Aviation Airports.” Invited Speaker, NACAA Spring Membership Meeting, May 1, 2007, Louisville, Kentucky

“General Aviation Airport Air Quality Monitoring Project.” Invited Speaker, Faster Freight – Cleaner Air Summit, February 26-28, 2007, Long Beach, California

“Atmospheric Monitoring of Ultrafine Particles.” Invited Speaker, Ultrafine Particles: The Science, Technology, and Policy Issues Conference, SCAQMD, April 30 - May 2, 2006, Los Angeles, California

“Update on Ultrafines.” Invited Speaker, California Industrial Hygiene Council 14th Annual Conference, December 2, 2004, Redondo Beach, California.

“A New Aerosol mini-Concentrator for Use in Conjunction with Low Flow-rate Continuous Aerosol Instrumentation.” Platform Presentation, 2004 American Association for Aerosol Research Conference, October 4-8, 2004, Atlanta, Georgia.

“Organic Compound Tracers of Primary and Secondary Sources of Fine and Ultrafine PM in the Los Angeles Basin.” Platform Presentation, 2003 American Association for Aerosol Research Conference, October 20-24, 2003, Anaheim, California.

“The Contribution of Biomass Combustion to Ambient Fine Particle Concentrations in the United States.” Invited Speaker, U.S.E.P.A. Region 9 STAR Environmental Research Seminar, October 8-9, 2003, San Francisco, California.

“Seasonal, Spatial, and Diurnal Variations of Individual Organic Compound Constituents of Ultrafine and PM_{2.5} in the Los Angeles Basin.” Poster Presentation, 2003 American Association for Aerosol Research Fourth Colloquium on PM and Human Health, March 31-April 4, 2003, Pittsburgh, Pennsylvania.

“Performance Evaluation and Use of a Continuous Monitor for Measuring Size-Fractionated PM_{2.5} Nitrate.” Platform Presentation, 2002 American Association for Aerosol Research Conference, October 7-11, 2002, Charlotte, North Carolina.

“The Contribution of Biomass Combustion to Ambient Fine Particle Concentrations throughout the United States.” Platform Presentation, 2001 American Association for Aerosol Research Conference, October 15-19, 2001, Portland, Oregon.

“Organic Compounds in Biomass Smoke from Residential Wood Combustion: Emissions Characterization at a Continental Scale.” Platform Presentation, Seventh International Conference on Carbonaceous Particles in the Atmosphere, November 26-29, 2000, San Juan, Puerto Rico.

“Organic Compounds in the Fine Particle Emissions from the Combustion of North American Wood Species in Wood Stoves.” Platform Presentation, 2000 American Association for Aerosol Research Conference, November 6-10, St. Louis, Missouri.

“Fine Particle Emissions from the Fireplace Combustion of a Variety of North American Wood Species.” Platform Presentation, 1999 American Association for Aerosol Research Conference, October 11-15, Tacoma, Washington.

“Composition and Size Distribution of Particulate Emissions from Burning Church Candles.” Platform Presentation, 1997 American Association for Aerosol Research Conference, October 13-17, Denver, Colorado.

Radhika K. Fox

(b) (6)

Career Profile

- An accomplished and results-driven executive with over two decades of experience as a key advisor, problem solver, mentor, innovator, crisis communicator, and policy expert in the nonprofit and public sectors.
- Extensive public policy expertise in the areas of environmental protection, water resources, equity and environmental justice, sustainability, and infrastructure investment.
- A seasoned executive with a track record of managing the day-to-day operations of complex enterprises, including budgets, personnel, external affairs, and employee development.
- Expert facilitator and consensus-builder on complex environmental issues.
- Highly effective fundraiser with impeccable fiscal management skills for public sector and non-profit organizations.
- Nationally recognized thought leader and sought-after public speaker that is interviewed by local, regional, and national media outlets on a wide range of water issues.

Professional Experience

Biden-Harris Infrastructure Policy Committee | National Co-Chair

2020

Served as one of the Co-Chairs of the Biden-Harris Infrastructure Policy Committee focused on water, transportation, clean energy, and climate resilience.

- Facilitated a volunteer committee of 400 infrastructure subject matter experts including former Obama/Biden appointees; congressional staffers; heads of local and state water agencies; mayors; policy and regulatory specialists; and equity and environmental groups.
- Provide the Biden-Harris campaign with rapid response on policy questions; biweekly updates on major policy issues; and development of Day 1 and 100 Day actions for consideration.
- Provided leadership and oversight on the development of all water policy proposals that were developed by the Committee for consideration by the EPA, including: lead and copper rule, PFAs, water infrastructure investments vehicles (SRFs, WIFIA); smart water and utility modernization; workforce development; equity and environmental justice screening tools; rural water; water utility partnerships; and more.

US Water Alliance | Oakland, CA and Washington, DC Chief Executive Officer

2015—present

Leads the US Water Alliance, which is the only national, non-partisan network that unites diverse stakeholders—water utilities, environmental groups, equity advocates, the private sector, agricultural interests, and others—on common-ground solutions to our nation's pressing environmental, water, and climate challenges.

- Sets the overall strategic, policy, financial, operational, and growth direction for the premier national network whose members provides drinking water, wastewater, and stormwater management to over 200 million people in America.
- Leads strategic planning and priority setting for the US Water Alliance, including development of the first ever strategic plan and impact framework for the organization.
- Oversees board management, human resources, personnel, employee development, budgeting, financial planning, and fundraising.

- Serves as trusted advisor and technical assistance provider to Mayors, Governors, local, state, and federal public officials on complex water management issues.
- Serves as the primary media spokesperson for the organization for print, tv, and radio outlets. A frequent commentator on a range of water and environment issues.
- Leads the engagement strategy for all stakeholders involved with the US Water Alliance, including water utilities, environmental organizations, community advocates, philanthropy, business community, and policymakers to advance innovative ideas and common-ground solutions to secure a sustainable water future for all.
- Leads the *Value of Water Campaign*, a national coalition of public and private water agencies, business and community leaders, and national organizations building public will for investment in water infrastructure and water resources.
- Designed and oversee *Imagine A Day Without Water*, the seminal national day of action that reaches millions of Americans a year.
- Serves on Steering Committee of *United for Infrastructure*, a bi-partisan effort that brings together American businesses, workers, elected leaders, and everyday citizens to call for smart infrastructure policy and investment.

San Francisco Public Utilities Commission | San Francisco, CA

2011—2015

Director of Policy and Government Affairs

Served on the senior management team and led policy development, government affairs, stakeholder engagement, and national partnerships for the San Francisco Public Utilities Commission—a public agency of the City and County of San Francisco that provides drinking water, wastewater, stormwater, and electric power services to over 2.6 million people in the San Francisco Bay Area.

- Set the strategic direction for the agency's policy and regulatory agenda and designed the advocacy strategy. This included agency review and engagement on over 500 pieces of local, state, and federal legislation related to water, wastewater, energy, climate, infrastructure financing, and economic development.
- Managed strategic relationships with the Mayor's Office, Board of Supervisors, state elected officials and agency staff, congressional representatives, federal agencies, and the White House.
- Lead stakeholder and community engagement strategies for agency-wide priorities including rate-setting, annual budget process, capital improvement plan, city/state policy measures and ballot initiatives, and the community benefits and environmental justice strategy.
- Oversaw staff, consultants, and state and federal lobbyists for the department.
- Managed the budget and all professional contracts for the department.
- Served as a Disaster Service Worker and participated in stakeholder management and crisis communications for major disasters as such at the 2014 Rim Fire.

PolicyLink | Oakland, CA, and Washington, DC

2000—2011

Federal Policy Director (2009-2011, promoted from prior positions)

*Served as a senior staff member at PolicyLink, a national research and action institute advancing racial and economic equity by *Lifting Up What Works*.®*

- Set the vision, strategic direction, and advocacy strategy to advance the organization's policy agenda on a wide array of issues including infrastructure investment, transportation, sustainable communities, access to healthy food, education, and workforce development.
- Served as primary liaison to Congress, White House, and federal agencies for all PolicyLink priorities.
- Effectively shaped and supported the implement of key Administration and Congressional priorities consistent with PolicyLink positions, including: American Recovery and Reinvestment Act, federal Transportation reauthorization, HUD-DOT-EPA Sustainable Communities Initiative, Healthy Food Financing Initiative, Promise Neighborhoods, and Choice Neighborhoods.

- Created the Equity Caucus at Transportation for America, a coalition of civil rights, housing, community, economic justice, faith-based, health, labor, tribal, and transportation organizations.
- Managed fundraising, budgets, staff, and consultants.

Education

M.A. City and Regional Planning University of California, Berkeley	May 2000
B.A. Religion/Philosophy Columbia University	May 1995

Volunteer Service

Aspen Institute Delegate, India-U.S. Track II Dialogue on Climate Change and Energy	2020—present
Water Solutions Network Advisory Council	2019—present
Jobs to Move America Board of Directors	2018—present
PolicyLink Board of Directors	2015—present

Recent Honors and Recognition

Great Lakes Leadership Award Great Lakes Protection Fund <i>Awarded the Great Lakes Leadership Award for excellence in communications on the value of water.</i>	October 2020
Water Equity and Affordability Honoree Washington Suburban Sanitary Commission <i>Recognized as a water equity champion, alongside Senator Ben Cardin, by the largest public water agency in the state of Maryland.</i>	October 2019
President's Award for Excellence WateReuse Association <i>Co-founded the National Blue Ribbon Commission for Onsite Non-potable Water Systems, a coalition of water utilities and public health agencies creating and advancing new policies at EPA and in over 16 states.</i>	September 2019
Water Innovators Cohort Spring Point Partners	2018—present

Select Press Clips and Speeches

Sept 16, 2020: American Public Media, Podcast: In Deep
<https://www.indeep.org/episode/2020/09/16/well-well-well>

July 26, 2020: Urban Milwaukee, Oped: More Water Infrastructure Funding Needed
<https://urbanmilwaukee.com/2020/07/26/op-ed-more-water-infrastructure-funding-needed/>

July 21, 2020: The Atlantic, Event: Water Summit
<http://watersummit.theatlantic.com/>

June 11, 2020: POLITICO, Event: America's Environmental Future: The Water Solution (no link available)

May 4, 2020: Crain's Chicago Oped: Water Must Be Part of Our COVID Recovery (also ran in Crain's Detroit and Cleveland)
<https://app.box.com/s/ol3bnhahtfvb2ekiduyt4pkebz1prshd>

December 11, 2019: Washington Post, Article: It's Almost 2020 and 2 Million American's Still Don't Have Running Water, According to New Report
https://www.washingtonpost.com/national/its-almost-2020-and-2-million-americans-still-dont-have-running-water-new-report-says/2019/12/10/a0720e8a-14b3-11ea-a659-7d69641c6ff7_story.html

September 20, 2019: Dallas Morning News, Oped: Texans Must Treat Every Drop of Water As Precious
<https://www.dallasnews.com/opinion/commentary/2019/09/30/texans-must-treat-every-drop-of-water-as-precious/>

October 16, 2018: National Geographic, Event: Environmental Justice: Running Dry (no link available)

September 20, 2018: Event: Cleveland Sustainability Summit (no link available)

July 2018: Event: Aspen Big Ideas Festival, Building A Secure Water Future
<https://www.aspenideas.org/speakers/radhika-fox>

Michal Ilana Freedhoff, Ph.D.

(b) (6)

Policy expert with more than twenty years of government legislative, management, investigative and communications experience. Proven track record in leading collaboration, negotiation and engagement with diverse stakeholders to achieve legislative and investigative accomplishments in policy areas that include the regulation of chemicals, automobile fuel economy and emissions standards, consumer product and automobile safety, energy and the environment, civilian nuclear safety and homeland security.

POLICY AND MANAGEMENT EXPERIENCE

2017 – present – **Minority Director of Oversight**, *Senate Environment & Public Works Committee*
(*Ranking Member Thomas R. Carper*)

- **Role #1:** Directed Committee oversight and processing of Trump Administration nominees:
 - Directed Committee staff involved in the nomination (including direct report and other Committee staff), briefed the Ranking Member, other Committee Members and staff, engaged with outside ethics and environmental stakeholders, reviewed financial and other materials submitted by or related to the nominees, developed opening statements and press materials for confirmation hearings, drafted and/or reviewed hearing questions for the Ranking Member and other Committee Members, drafted and/or reviewed pre- and post-hearing questions for nominees, developed Floor materials, worked extensively with reporters covering controversial nominees.
 - Developed and executed strategies that led to the defeat of two nominees (Michael Dourson (EPA), Kathleen Hartnett White (CEQ)).
 - Developed and executed strategies that resulted in policy concessions (Greaves, McIntosh, Dunn) and the provision of requested agency documents (Bodine, Leopold, Ross, McIntosh) in exchange for the Ranking Member's assistance in securing the rapid Senate confirmation of less objectionable nominees.
- **Role #2:** Oversaw investigation of the Trump Administration's environmental actions and ethical conflicts (with a focus on EPA):
 - Directed Committee oversight staff and fellows, briefed the Ranking Member and other Senators' staff, engaged with outside stakeholders, environmental experts and former Obama Administration appointees, sought and obtained confidential disclosures and documents from EPA political appointees and career staff, prepared oversight letters, investigative and policy reports, worked extensively with reporters covering Trump Administration personnel and policies, coordinated and collaborated with House committees and other Senate offices.
 - Extensive oversight of ethics and other concerns that led to the resignations of EPA Administrator Scott Pruitt and Air Administrator Bill Wehrum.
 - Extensive oversight of key environmental policy roll-backs designed to expose and increase the legal vulnerability of regulations and other policies through the disclosure of conflicting legislative history or statutory interpretations and rulemaking or other irregularities (especially WOTUS, glider truck GHG rule, light duty vehicle GHG standards, transparency, PFAS cleanup guidance and SNUR, appointment of EPA science advisors, decision not to ban chlorpyrifos, TSCA implementation, NEPA, and MATS). Committee oversight letters and disclosed documents extensively cited in pending litigation on some of these rulemakings (especially light duty vehicle GHG standards and preemption rules) and resulted in delays in finalizing (WOTUS, transparency) or a failure to finalize (glider truck GHG) rules.
 - Engaged extensively with GAO and the EPA IG related to several ethics, policy and regulatory issues of interest.
 - Directed the development of and/or developed several reports designed to coincide with key events (a one-year report on the Trump EPA, an ethics-focused investigative report on Bill Wehrum, a report describing the nexus between air pollution roll-backs, environmental justice and COVID-19).

- **Role #3: Light Duty Vehicle Greenhouse Gas Standards:**
 - Conceived of and led Congressional efforts aimed at negotiating a compromise on vehicle fuel economy and greenhouse gas standards with the State of California, including participation in numerous meetings with Trump Administration White House, EPA and DOT appointees, State of California appointees, and industry and environmental stakeholders.
 - Direct involvement in the development, negotiation and announcement of a voluntary vehicle greenhouse gas emissions standards agreement between automakers and California, including extensive engagement with technical, policy, legal and press teams of some parties to the agreement.
 - Conducted significant oversight aimed at exposing the legal flaws associated with the Trump Administration's rules to preempt California and weaken the federal standards, much of which has been cited extensively in pending litigation and has led to the initiation of an EPA IG investigation.
- **Role #4: PFAS legislation:**
 - Led efforts to write and negotiate bipartisan legislation to regulate, research, monitor for and remediate PFAS chemical contamination, some of which was enacted into law in 2019 (TRI, drinking water monitoring, research, funding, disposal guidance) and some of which passed the Senate (directed rulemaking and other revisions to SDWA for PFAS).

2013-2017– Director of Oversight & Investigations, Senator Edward J. Markey

- **Role #1:** Assisted with the supervision of the Senator's legislative staff and fellows in carrying out his Committee and Floor legislative, investigative and strategic priorities, including efforts to combat opioid and heroin addiction, response to Ebola and Zika, nonproliferation and nuclear safety, energy and environment, homeland security, consumer product and food safety, and gun control.
- **Role #2:** Oversaw Ranking Member Markey's work on the Superfund, Waste Management & Regulatory Oversight Subcommittee of the Environment & Public Works Committee
 - Led key Senate and bicameral conference negotiations that enabled Senate consideration and subsequent enactment of the re-authorization of the Toxic Substances Control Act, including extensive engagement with Obama Administration political appointees, EPA career experts, external stakeholders and key Senate and House offices.
 - Supervised the planning of Subcommittee hearings; oversaw the preparation of an investigative report about and legislation to improve the management of asbestos in schools.
- **Role #3: Oversight and Investigation:**
 - Led high-profile investigative and legislative efforts related to the GM ignition switch, Takata airbag, VW emissions defeat devices and other automotive issues; directed the preparation of a major investigative report entitled "Hacking and Tracking: Security & Privacy Gaps Put American Drivers at Risk" and legislation to improve cyber-security and privacy standards for automobiles; prepared and staffed Senator Markey for relevant hearings and activities in the Commerce, Science and Transportation Committee.

2013-2014 – Senior Policy Advisor, Senate Committee on Environment and Public Works

- Detailed onto then-Chairman Barbara Boxer's Committee staff to help lead the Committee's oversight of the Nuclear Regulatory Commission, including the design and staffing of hearings, conducting oversight, preparing legislation and consideration of nominees.

2001-2013 – **Policy Director**, *Congressman Edward J. Markey (2007-13)*
Senior Investigator/Policy Coordinator, *House Natural Resources Committee (2011-13)*
Professional Democratic Staff, *House Energy & Commerce Committee (2010-11)*, *House Select Committee on Energy Independence & Global Warming (2007-10)*
Senior Policy Associate, *Congressman Edward J. Markey (2001-07)*

- Coordinated Congressman Markey's energy and environmental legislative and investigative efforts that overlapped the jurisdictions of the Natural Resources, Energy and Commerce and Select Energy Independence and Global Warming Committees.
- Assisted with the supervision of the Congressman's legislative staff and fellows in carrying out his Committee and Floor legislative, investigative and strategic priorities, including food, chemical consumer product and medical device and drug safety, nonproliferation and nuclear safety, energy and environment, and homeland security.
- Significant oversight efforts include investigative reports, oversight letters and associated legislation on the ability of the electric utilities to prevent and respond to cyber-attacks; implications of the Fukushima nuclear accident in Japan; the bacterial meningitis infections caused by tainted compounded drugs prepared by the New England Compounding Center; the potential impacts of hydraulic fracturing on drinking water; the oversight and enforcement of drilling safety regulations on federal land; and the disposal of wastewater from hydraulic fracturing operations; extensive and high-profile investigative efforts into the BP oil spill; the Bush Administration's response to the landmark Supreme Court global warming decision in *Massachusetts v EPA* (including the issuance of a bipartisan subpoena for documents).
- Significant legislative accomplishments include the 2010 House passage of comprehensive chemical and drinking water security legislation and a bill to amend the Safe Drinking Water Act (SDWA); the transportation planning and vehicle technology and emissions provisions in the Waxman-Markey climate bill; the 2009 negotiation and enactment of "Cash for Clunkers" (a \$3 billion trade-in program which helped sell nearly 700,000 more fuel-efficient vehicles during the economic downturn); the creation of an online, searchable database of adverse incidents potentially caused by defective consumer products enacted as part of the CPSC Reform Act of 2008; provisions to require 100% scanning of inbound maritime cargo for radiation, to require that rail shipments of extremely hazardous materials occur via the safest and most secure route, and to create strong whistleblower protections for rail and mass transit security workers enacted as part of the 911 Commission Recommendations Act of 2007; provisions to require increased fuel economy standards for cars and light trucks enacted as part of the Energy Independence and Security Act of 2007; provisions to improve the security of nuclear facilities and materials that could be used to construct a dirty bomb, and improve whistleblower protections for employees and contractors of DOE and NRC included in the Energy Policy Act of 2005.

2000-2001 - **Director of Regulatory Policy**, *Time Domain Corporation*

- Helped lead efforts to obtain Federal Communications Commission (FCC) and European Union approval for ultra-wideband wireless technology, managed the work of legal, technical, public relations and policy consultants to the company; attended and advocated on behalf of the company at meetings at the FCC, National Telecommunications and Information Agency, Radio Technical Committee on Aviation, the U.S. Congress, and other Federal Agencies; helped to convey regulatory status to prospective investors and business partners.

1998-2000 - **Professional Democratic Staff**, *House Science Committee*

- Responsibility for oversight and legislation related to civilian Department of Energy (DOE) research programs including Energy Efficiency and Renewable Energy, Nuclear Energy and Fossil Energy.
- Staffed Democratic Members of the Committee on hearings, markups and Floor debates.
- Led investigations into inappropriate conduct by U.S. Department of Energy laboratories seeking to commercialize technologies, and the sequencing and patenting of human genetic material.

1999 – 2000 - **Assistant Instructor**, *Georgetown University*

- “Shaping National Science Policy,” a class taught to undergraduate students.

1996-1998 - **Congressional Science and Engineering Fellow**, *Congressman Edward J. Markey*

- Competitively selected and fully funded participant in the AAAS program for Ph.D. scientists and engineers.
- Legislative Assistant for Nonproliferation (export controls on nuclear/dual-use technologies, domestic nuclear weapons laboratory security, disposition of excess nuclear weapons materials) and Energy (nuclear waste, nuclear reactor safety, nuclear fuel cycle, solar and renewable energy)

1995-1996 - **Researcher/Writer**, *American Institute of Physics* - College Park, MD

- Created 12 “Physics Success Stories,” a set of constituent tools for scientists who wish to contact their Member of Congress. Used in hundreds of Congressional visits/letters, PSS illustrate the benefits that result from strong federal support for basic and applied research.

OTHER

2010 - **Member, Montgomery County Work Group on Pepco**

- Appointed by Montgomery County Executive to serve on a Work Group to investigate the causes of significant electricity reliability issues in the County, write a report and make recommendations to improve services. Represented the Work Group delivering testimony in the State legislature and the County council.

EDUCATION

11/95 **Ph.D.**, physical chemistry, University of Rochester, Rochester, NY, Thesis entitled
“Quantum Confinement Effects on Semiconductor Nanocrystals”

6/93 **M.S.**, physical chemistry, University of Rochester, Rochester, NY

6/91 **B.Sc.**, chemistry, McGill University, Montreal, Canada

LANGUAGES

Hebrew (fluent), Mandarin, Spanish and French (functional)

PRESENTATIONS – available on request

H. Christopher Frey
Glenn E. Futrell Distinguished University Professor
Department of Civil, Construction, and Environmental Engineering
North Carolina State University
Raleigh, NC 27695-7908

(b) (6)

Education

Ph.D., Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA, May 1991.

Master of Engineering, Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, May 1987.

B.S., Mechanical Engineering, University of Virginia, Charlottesville, VA, May 1985.

Professional Experience

Aug 15 – present Glenn E. Futrell Distinguished University Professor of Civil, Construction, and Environmental Engineering, *North Carolina State University*, Raleigh, NC

- Have supervised over 50 direct reports, including Graduate Research Assistants and Postdoctoral Fellows
- Have managed over 70 sponsored research projects with total funding over \$12 million
- Have managed several multi-institutional, multi-disciplinary research projects, including supervising efforts of senior colleagues.
- Served as President of the Society for Risk Analysis (2006), which had over 2,000 members. Chaired the Board of Directors for SRA. Oversight of SRA budget and operations.
- Served as a Director on the Board of Directors of the Air & Waste Management Association (2016-2018), including oversight of A&WMA budget and operations.
- Routinely organize and run courses that involve coordination with students of varying levels and backgrounds.
- Highly engaged in national and international leadership activities in science and technology, including leadership roles in development of assessments, guidance, and policy-relevant recommendations.

Jun 16 – Aug 19 Visiting Professor, Division of Environment and Sustainability, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong

Sep 12 – Aug 15 Distinguished University Professor of Civil, Construction, and Environmental Engineering, *North Carolina State University*, Raleigh, NC

Jan 14 – Jun 14 Visiting Professor, Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology, Kowloon, Hong Kong

- Aug 04 – Aug 12 Professor, Department of Civil, Construction, and Environmental Engineering, *North Carolina State University*, Raleigh, NC
- Aug 06 – Aug 07 Sabbatical: Exposure Modeling Advisor, National Exposure Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC.
- Jul 99 – Jul 04 Associate Professor, Department of Civil Engineering, *North Carolina State University*, Raleigh, NC
- Jan 94 - Jun 99 Assistant Professor, Department of Civil Engineering, *North Carolina State University*, Raleigh, NC
- Jun 91 - Dec 93 Research Associate (Research Faculty), Center for Energy and Environmental Studies, and Department of Engineering and Public Policy, Carnegie Institute of Technology, *Carnegie Mellon University*, Pittsburgh, PA
- 1993 (Fall) Adjunct Assistant Professor, Graduate School of Public and International Affairs, *University of Pittsburgh*, Pittsburgh, PA
- 1992 (Summer) Environmental Science and Engineering Fellow, Office of Research and Development, *U.S. Environmental Protection Agency*, Washington, DC. Sponsored by American Association for the Advancement of Science (AAAS).
- Jul 88 - May 91 Research Assistant, Department of Engineering and Public Policy, Carnegie Institute of Technology, *Carnegie Mellon University*, Pittsburgh, PA
- Jun 87 - Jul 88 Engineer, Combustion and Chemical Engineering Department, *Radian Corporation*, Research Triangle Park, NC
- Aug 85 - May 87 Research Assistant, Department of Mechanical Engineering, Carnegie Institute of Technology, *Carnegie Mellon University*, Pittsburgh, PA
- 1981 - 1986 Summer jobs:
- Mechanical Engineer, *General Electric*, Valley Forge, PA, 1986
 - Mechanical Engineer, *Voice of America*, U.S. Information Agency, Washington, DC, Summer 1985
 - Research Apprentice/Engineering Aid, *U.S. Naval Research Laboratory*, Washington, DC, Summers of 1981 and 1984
 - Engineering Technician/Engineering Aid, *U.S. Army Materials, Fuels, and Lubricants Laboratory*, Fort Belvoir, VA, Summers of 1982 and 1983

Special Appointments

- 2017-2020 Member, Main Member Slot, Standing committee on Transportation and Air Quality (ADC20), Transportation Research Board, Washington, DC.
- 2016-present Member, MOVES Model Review Work Group, Clean Air Act Advisory Committee, U.S. EPA
- 10/18-present Chair, Nongovernmental Independent Particulate Matter Review Panel (formerly the EPA CASAC PM Review Panel), comprised of 20 scientists.
- Led the reconvening of a scientific review panel, including recruiting members, overall leadership and management, and chief scientific role. The latter

included running public meetings, assuring responsiveness to charge questions, and development and delivery of technical assessment and advice. Also led the group to develop a paper that was published in the *New England Journal of Medicine* in August 2020.

- 9/2013 – present Adjunct Professor, Division of Environment and Sustainability, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong.
- 2013-2019 Editorial Advisory Board, *Atmospheric Environment*, Elsevier
- 2016 – 2018 Director (Member), Board of Directors, Air & Waste Management Association, Pittsburgh, PA (elected).
- 2017 Vice President, Air & Waste Management Association
- 2015 – 2018 Member, Particulate Matter Review Panel, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency
- Oct 12 – Sep 18 Member, Science Advisory Board, U.S. Environmental Protection Agency (appointed by EPA Administrator, reappointed October 2015 for 2nd 3-year term).

Actively participated in the Regulatory Review Workgroup, leading assessments on numerous planned actions including the Clean Power Plan, vehicle greenhouse gas emission standards, heavy duty vehicle emission standards (glider proposed rule), transparency rule, and others.
- 2015 – 2018 Member, Oxides of Nitrogen Primary NAAQS Review Panel, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency

Substantial technical and editorial contributions to CASAC's advice to the EPA Administrator
- 2014 – 2018 Member, Sulfur Oxides Review Panel, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency

Substantial technical and editorial contributions to CASAC's advice to the EPA Administrator
- 2016 Invited Expert, IPCC Expert meeting for Technical Assessment of IPCC Inventory Guidelines (Cross-sectoral issues), 27-29 April 2016 in Wollongong, Australia.

Provided input on decision by IPCC to update prior guidance on uncertainty in greenhouse gas emission inventories.
- Oct 12 – Jun 15 Chair, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency (appointed by EPA Administrator).

Chair of statutorily mandated Federal Advisory Committee tasked to advise the EPA Administrator on National Ambient Air Quality Standards. Led and oversaw all official communications from CASAC to the Administrator.

- 2013- Jun 2015 Chair, Oxides of Nitrogen Review Panel, U.S. EPA Clean Air Scientific Advisory Committee
Led the CASAC review of EPA assessments and development of advice for the EPA administrator.
- 2012-2014 Chair, Ozone Review Panel, U.S. EPA Clean Air Scientific Advisory Committee
Led the CASAC review of EPA assessments and development of advice for the EPA administrator. Our advice was influential in the Administrator's decision to tighten the primary ozone NAAQS standard. The advice communicated in our June 26, 2014 letter to the Administrator was cited numerous times in the 2019 DC Circuit Court opinion upholding the 2015 Ozone NAAQS.
- 2010 – 2013 Chair, Lead Review Panel, U.S. EPA Clean Air Scientific Advisory Committee
Led the CASAC review of EPA assessments pertaining to led and formulation of scientific and policy advice regarding the Lead NAAQS
- Oct 09 – Sep 12 Member, Board on Environmental Studies and Toxicology (BEST), National Research Council.
Performed oversight of existing NRC studies, contributed to the identification and formulation of new committee studies.
- Oct 08 – Sep 12 Member, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency (appointed by EPA Administrator as one of the seven members of the statutory CASAC. Reappointed to 2nd 3-year term).
- Oct 08 – Sep 09 Member, Committee on Review of EPA's Toxicological Assessment of Tetrachloroethylene, National Research Council.
- 2008 – 2009 Member, U.S. EPA Science Advisory Board (SAB) Expert Elicitation Advisory Panel.
- 2007 - 2011 Member, Particulate Matter (PM) Review Panel, Clean Air Scientific Advisory Committee (CASAC), U.S. Environmental Protection Agency.
- 2007 – 2011 Federal Advisory Committee Act (FACA) MOVES Review Workgroup (review of U.S. EPA's MOVES mobile source emission factor and inventory model)
- 2007-2010 Author, Multi-Pollutant Air Quality Management Assessment, NARSTO
- Apr 05 – Nov 07 Member, Working Group on Uncertainty in Exposure Assessment, International Programme on Chemical Safety (IPCS), World Health Organization (WHO).
- Dec 04 – Dec 07 President-Elect, President, Past-President of the Society for Risk Analysis.
- May 04 – Jun 06 Expert and Lead Author, 2006 Guidelines on National Greenhouse Gas Emission Inventories, Intergovernmental Panel on Climate Change (IPCC).
Leadership in development of international guidance on quantification of uncertainty in national greenhouse gas emission inventories, and lead

authorship of the chapter on uncertainty in the resulting guidelines. Close collaborations with international colleagues. Numerous international meetings, including in the Phillipines, Norway, Australia, and Russia.

Apr 04 – Aug 06 Member, FIFRA Scientific Advisory Panel, U.S. Environmental Protection Agency.

Performed statutorily mandated function of reviewing the scientific basis for risk assessments developed by pesticide registrant applicants.

Mar 04 – Jul 06 Member, National Research Council Committee on the Effects of Changes in New Source Review Programs for Stationary Sources of Air Pollutants.

Detailed review and assessment of the need for and effectiveness of New Source Review, particularly with regard to modification of existing sources.

Scholarly and Professional Honors

1. *Undergraduate Honors: Rodman Scholar*, University of Virginia, 1981-1985 (top 6% of entering engineering students); *National Society of Professional Engineers Scholarship*: 1981-1982; *Elks Lodge Scholarship*: 1981-1982; *Intermediate Honors for High Distinction*, University of Virginia, 1983; *Raven Society*, University of Virginia honor society - elected 1984; *M.E. George Scholarship*, University of Virginia, 1984-1985. Selected based on character, leadership, and scholarship for residence on the Lawn of the University of Virginia, 1984-1985 (47 of 2,500 fourth year undergraduates selected). The Lawn is part of the original University "Grounds" designed by Thomas Jefferson, and residence on the Lawn is considered a high honor.
2. *Scientific, Engineering, and Leadership Honorary Society Memberships*
Pi Tau Sigma, the national mechanical engineering honor society. Elected Oc. 1983.
Omicron Delta Kappa, the national leadership honor society. Elected April 1984.
Tau Beta Pi, the national engineering honor society. Elected October 1984.
Sigma Xi, the scientific research society. Elected April 1986.
3. *Environmental Science and Engineering Fellow*, American Association for the Advancement of Science and the U.S. Environmental Protection Agency, Summer 1992. Also received *1992 Robert C. Bernard Environmental Science and Engineering Scholarship*, American Association for the Advancement of Science, Fall 1992, for best project produced under the fellowship.
4. Faculty Early Career Development (CAREER) Award, National Science Foundation (received June 1997).
5. Invited participant, National Academy of Engineering, Fifth Annual Symposium on Frontiers of Engineering, Irvine, CA, October 13-16, 1999. Participation was limited to 100 outstanding engineers age 30 to 45 from academia, government, and industry who are invited to attend after a competitive nomination process.
6. Chauncey Starr Award, Society for Risk Analysis, December 1999. The Chauncey Starr Award is awarded to a risk analyst under 40 in recognition of "exceptional contributions to the field of Risk Analysis."
7. Kimley-Horn Faculty Award, Department of Civil Engineering, Spring 2002.
8. Elected as to a three year term as President-Elect, President, and Past-President of the Society for Risk Analysis, 2004-2007.
9. 2004-2006 National Research Council member of Committee on Changes in New Source Review air pollution regulations.
10. Invited to serve on National Academy of Engineering organizing committee for the 2005 German-American Frontiers of Engineering conference.

11. 2004-2006 invited as U.S. delegation member and lead author to Intergovernmental Panel on Climate Change international meeting and activity on revising greenhouse gas emissions guidance.
12. 2004-2005 invited to serve as steering committee member and a lead author on tri-lateral (Canada-US-Mexico) NARSTO assessment of emission inventories.
13. 2004-2006 one of seven appointed members of the U.S. Environmental Protection Agency FIFRA Scientific Advisory Panel.
14. 2006 invited to serve as a lead author tri-lateral (Canada-US-Mexico) NARSTO assessment of methods for analyzing and managing multi-pollutant environmental problems.
15. December 2006. Fellow, Society for Risk Analysis.
16. Recognized by the Intergovernmental Panel on Climate Change (IPCC) for “contributing to the award of the Nobel Peace Prize for 2007 to the IPCC.”
17. Clean Air Scientific Advisory Committee (CASAC), Member, Appointed by the Administrator of the U.S. Environmental Protection Agency to a 3-year term October 2008 – September 2011. Reappointed for a 2nd 3-year term October 2011 to September 2014. Appointed Chair of CASAC October 2012 to September 2014. Chair of Lead Review Panel, 2011-2013. Chair of Ozone Review Panel, 2012-2013.
18. March 2008. Fellow, Air & Waste Management Association.
19. 2008 NCSU Alumni Association Outstanding Research Award, May 8, 2008.
20. 2008 Mobile Clean Air and Renewable Energy Award – Individual, May 6, 2008.
21. 2009 Earthwise Faculty Award, Office of Sustainability, North Carolina State University, April 2009.
22. 2012 Lyman A. Ripperton Environmental Educator Award from the Air & Waste Management Association (conferred June 2012 at the Annual Meeting).
23. 2012, received title of Distinguished University Professor of Civil, Construction, and Environmental Engineering, NC State University.
24. Certificate of Excellence in Reviewing from *Atmospheric Environment* in recognition of an outstanding contribution to the quality of the journal for 2012, awarded March 2013.
25. Selected as a “Best Reviewer” for 2012 for the *Journal of the Air & Waste Management Association*.
26. Best Paper award from Transportation Research Board Roundabout Committee for paper: Salamati, K., N.M. Rouphail, H.C. Frey, B. Liu, and B.J. Schroeder, “A Simplified Method for Comparing Emissions at Roundabouts and Signalized Intersections,” January 14, 2015.
27. Received chaired position with title Glenn E. Futrell Distinguished University Professor of Civil, Construction, and Environmental Engineering, NC State University, August 2015.

28. Spotlight Paper, Transportation Research Board (TRB) Transportation and Air Quality Committee (ADC20): top reviewed paper out of 110 submitted via ADC20 for the TRB Annual Meeting: Khan, T., and H.C. Frey, "Evaluation of Light Duty Gasoline Vehicle Rated Fuel Economy based on in-use Measurements," Transportation Research Record, 2570:21-29 (2016).
29. Dr. H. Christopher Frey who is a member of the Board of Directors of the Air & Waste Management Association (A&WMA), was elected in November 2016 as a 2017 Vice President of the A&WMA . He will join the A&WMA Executive Committee in addition to continuing to serve on the board
30. The Transportation and Air Quality Committee (ADC20) of the Transportation Research Board has selected a paper authored by Dr. H. Christopher Frey and graduate students Maryam Delavarrafiee and Sanjam Singh as its "Spotlight Presentation" for the 2017 TRB Annual Meeting. The paper, "Real-World Freeway and Ramp Activity and Emissions for Light Duty Gasoline Vehicles," was ranked 1st among 110 papers reviewed by ADC20 for the Annual Meeting.
31. Excellence in Review Award from the journal *Environmental Science and Technology*, in recognition of going "the extra distance to write reviews that were truly exceptions." Only 18 award recipients internationally, and only 7 in the U.S., were selected based on about 10,000 reviews submitted to ES&T in the past year (<http://pubs.acs.org/doi/10.1021/acs.est.7b05472>). November 2017.
32. Selected as the featured speaker for the 48th Annual A&WMA Critical Review, 111th Annual Conference and Exhibition, Air & Waste Management Association, Hartford, CT, June 26, 2018. Topic: "Trends in Onroad Transportation Energy and Emissions."
33. Inducted into the Research Leadership Academy of the Alumni Association of North Carolina State University, April 23, 2018.
34. 2019 Frank A. Chambers Excellence in Air Pollution Control Award, Air & Waste Management Association
35. 2020 Alcoa Foundation Distinguished Engineering Research Award, College of Engineering, North Carolina State University.
36. Certificate of Merit, Outstanding Poster Presentation on "Quantification of Variability in Human Exposure to Air Pollution in Hong Kong," at the 6th International Symposium on Regional Air Quality Management, Hong Kong (virtual meeting), October 2020.

Student Awards – recent examples (since 2010)

- Brandon Graver won the first place Master's platform paper award at the Annual Meeting of the Air & Waste Management Association, June 2010.
- Brandon Graver (PhD) won 2nd place for Best Paper at the PhD level at the Annual Meeting of the Air & Waste Management Association, June 2011.
- Wan Jiao (PhD 2013) received a 2011 Student Merit Award from the Exposure Assessment Specialty Group of the Society for Risk Analysis.
- Wan Jiao (PhD 2013), 2013 Student Merit Award, Exposure Assessment Specialty Group, Society for Risk Analysis

- Brandon Graver, Jiangchuan Hu, Wan Jiao, Bin Liu, Gurdas Sandhu received student travel awards from the RTP Chapter and South Atlantic States Section of the Air & Waste Management Association to present papers at the A&WMA Annual Meeting in Chicago during June 25-28, 2013.
- Yuanfang Sun (MS ENE 2012) won the 2013 best M.S. thesis award from the Air & Waste Management Association (A&WMA) for her thesis “Repeatability of Real-World Vehicle Emissions Measurements.”
- Karoline Johnson (BS ENE 2013) won first place for undergraduate student poster on “Real World Hybrid Electric Vehicle Fuel Use and Emissions,” presented at the Annual Meeting of the Air & Waste Management Association June 24-28 in Chicago, IL
- Behdad Yazdani (MS ENE 2014) won 2nd place for best master’s thesis award, Annual Meeting of the Air & Waste Management Association, June, 2014, Long Beach, CA.
- PhD student Maryam Delavarrafiee, advised by Dr. Frey, won a Student Merit Award from the Exposure Assessment Specialty Group of the Society for Risk Analysis. Ms. Delavarrafiee received the award at the SRA Annual Meeting in Arlington, VA during Dec 7-10, 2015, where she presented a paper on “Empirical Comparison of Fine Particulate Matter Exposure Concentrations in North Carolina State University Campus Buses and a Personal Passenger Car.”
- Ph.D. student Tanzila Khan was first author of paper presented at the Transportation Research Board annual meeting in January 2016 and published in Transportation Research Record, titled “Evaluation of Light Duty Gasoline Vehicle Rated Fuel Economy Based on In-Use Measurements,” that was recognized as the “Spotlight Paper” by the TRB ADC20 committee for having the top reviews of 110 papers submitted via ADC20.
- Ph.D. student Maryam Delavarrafiee and M.S. student Sanjam Singh were authors of paper “Real-World Freeway and Ramp Activity and Emissions for Light Duty Gasoline Vehicles” presented at the Transportation Research Board annual meeting in January 2017 and accepted for publication in Transportation Research Record that was recognized as the “Spotlight Paper” by the TRB ADC20 committee for having the top reviews of 110 papers submitted via ADC20 (second year in a row).
- M.S. student Sanjam Singh won the Best Student Poster Award at the 27th Coordinating Research Council On-Road Vehicle Emissions Workshop in Long Beach, CA, March 28, 2017. His poster was titled “Comparison Of Fuel Economy And Gaseous Emissions Of Gas-Direct Injection Versus Port-Fuel Injection Light Duty Vehicles Based On Real-World Measurements.”
- Ph.D. student Shams Tanvir won 2nd place in the Ph.D. category for Best Student Poster at the Air & Waste Management Association Annual Meeting in Pittsburgh, June 5-8, 2017.
- Ph.D. student Nikhil Rastogi won the Best Student Poster Award at the 28th Coordinating Research Council On-Road Vehicle Emissions Workshop in Garden Grove, CA, March 20, 2018. His poster was titled “Modeling Real-World Fuel Use and Emissions for Diesel-Electric Locomotives.”
- Ph.D. student Nikhil Rastogi won the Best Student Platform Paper Award at the Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018 for his paper titled “Procedure for Estimating Energy Use and Emissions from a Diesel Passenger Train.”

- Ph.D. student Weichang Yuan won a 2nd Place Student Platform Paper Award at the Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018 for his paper titled “Development and Validation of Transit Bus Energy Use Rate Models.”
- PhD student Sailaja Eluri won a Certificate of Merit for her poster on “Quantification of Variability in Human Exposure to Air Pollution in Hong Kong” at the 6th International Symposium on Regional Air Quality Management and the 2nd Guangdong-Hong Kong-Macau Greater Bay Area Forum, held virtually on October 20-21, 2020.

Leadership Positions in Professional Societies

Organization	Description	Dates
Society for Risk Analysis	Member	1994 - present
	Chair, Awards Committee	12/08-12/09
	Chair, Nominations Committee	12/07-12/08
	Member, Committee of SRA Past Presidents on Regulatory Reform	March 2009
	Immediate Past-President, member of SRA Council and Executive Committee, and Chair of Publications Committee	12/06-12/07
	President , chair of SRA Council, Chair of the Executive Committee	12/05-12/06
	President-Elect, member of SRA Council and Executive Committee, Chair of Annual Meeting Committee	12/04-12/05
	Councilor: at-large elected member of governing board of SRA	12/96-12/99
	Education Committee, member	1998-1999
	Electronic Media Committee, member and Council Liason (oversaw creation of SRA web site, www.sra.org)	1996-1999
Research Triangle Chapter, Society for Risk Analysis	President-Elect (one year term)	1995
	President (one year term)	1996
	Past-President (one year term)	1997
	Webmaster	1998
Air & Waste Management Association	A&WMA Board of Directors (“Director”) Served as Vice President in 2017	Elected 2015, Term 2016-2018
	Member	1992 - present
	Chair, ET-1, Transportation: On and Off Road Mobile Sources	2011 - 2014
	Vice Chair, ET-1, Transportation: On and Off Road Mobile Sources	2008 - 2011
	Chair, EE-1 Health Effects and Exposure Committee	2002-2003
	Vice Chair, EE-1	2001-2002
	Secretary, EE-1	2000-2001
	Member, EE-5 Risk Assessment and Management Committee	2000 - present
	Member, AWMA Publications Committee	2012- present
	Member, AWMA Critical Review Committee	2018-present
NCSU Student Chapter of Air & Waste Mgmt. Assoc.	Founding Faculty Advisor	1995 - present
American Society of Civil Engineers	Member	1994 - 2010
	Member, Sessions Committee, Energy Division	1995 – 1998
	Member, Publications Committee for ASCE Journal of Energy Engineering	1995 - 2000

PEER-REVIEWED ARCHIVAL JOURNAL PAPERS

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82. Frey, H.C., A.P. Grieshop, A. Khlystov, J.J. Bang, N. Rouphail, J. Guinness, D. Rodriguez, M. Fuentes, P. Saha, H. Brantley, M. Snyder, S. Tanvir, K. Ko, T. Noussi, M. Delavarrafiee, and S. Singh, Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Transformation and Transport. Draft Final Report. Prepared by North Carolina State University, Desert Research Institute, North Carolina Central University, University of California at Berkeley, Virginia Commonwealth University, and University of North Carolina at Chapel Hill for Health Effects Research Institute, Boston, MA. November 28, 2018.
83. Frey, H.C. and N. Rastogi, “[Managing Energy and Emissions for Rail Operations](#),” FHWA/NC/2019-09, Prepared by North Carolina State University for North Carolina Department of Transportation, Raleigh, NC, November 2019.

COMMITTEE REPORTS

1. Science Advisory Board, *An SAB Report: Review of the USEPA’s Report to Congress on Residual Risk*, Prepared by Residual Risk Subcommittee of the Science Advisory Board for U.S. Environmental Protection Agency, EPA-SAB-EC-98-013, September 1998. (Contributing member of Residual Risk Subcommittee, also contributed pages A-15 to A-51).
2. Eastern Research Group, *Report of the Workshop on Selecting Input Distributions for Probabilistic Assessments*, Prepared by Eastern Research Group for U.S. Environmental Protection Agency, September 1998. Contributed “Chairperson’s Summary” (wrote Chapter 2 and reviewed/edited other chapters)
3. National Research Council, “Interim Report of the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants,” The National Academies Press, Washington, DC, January 2005 [contributing member of the committee].
4. NARSTO EI Assessment Team, Improving Emission Inventories for Effective Air Quality Management Across North America, A NARSTO Assessment, NARSTO-05-001, <http://www.narsto.org/section.src?SID=8>, 2005. Co-Chair of the NARSTO Emission Inventory Assessment, Lead Author for Chapter 8: “Methods for Assessment of Uncertainty and Sensitivity in Inventories,” and contributing author to Chapter 5: “Strengths and Weaknesses of Current Emission Inventories.”
5. Frey, C., J. Penman, L. Hanle, S. Monni, and S. Ogle, “Uncertainties,” Chapter 3 in Volume 1, General Guidance and Reporting, 2006 IPCC Guidelines for National Greenhouse Gas Inventories,

National Greenhouse Gas Inventories Programme, Inter-Governmental Panel on Climate Change, Technical Support Unit, Kanagawa, Japan, 2006.

6. Goodwin, J., M. Woodfield, M. Ibnoaf, M. Kozh, H. Yan, C. Frey, R. Montgomery, T. Pulles, D. Ottinger-Schaeffer, and K. Treanton, "Approaches to Data Collection," Chapter 2 in Volume 1, General Guidance and Reporting, *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, National Greenhouse Gas Inventories Programme, Inter-Governmental Panel on Climate Change, Technical Support Unit, Kanagawa, Japan, 2006.
7. National Research Council, *New Source Review for Stationary Sources of Air Pollution*, Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollution, The National Academies Press, Washington, DC, 2006 [contributing member of the committee].
8. World Health Organisation, *Harmonization Project Document No. 6, Part 1: Guidance Document on Characterizing and Communicating Uncertainty in Exposure Assessment*, International Program on Chemical Safety, World Health Organization, and Co-sponsored by International Labour Organization, and the United Nations Environmental Programme, WHO Geneva, Switzerland, 2008. (http://www.who.int/ipcs/publications/methods/harmonization/exposure_assessment.pdf)
9. WHO/FAO, Risk Characterization of Microbiological Hazards in Food Guidelines, Microbial Risk Assessment Series No. 17, World Health Organization and Food and Agriculture Organization of the United Nations, 2009. (Contributor).
10. National Research Council, *Review of the Environmental Protection Agency's Draft IRIS Assessment of Tetrachloroethylene*, The National Academies Press, Washington, DC, 2010, ISBN-13: 978-0-309-15094-1 [contributing member of the committee]. (http://www.nap.edu/catalog.php?record_id=12863).
11. U.S. Department of Transportation, *Transportation's Role in Reducing U.S. Greenhouse Gas Emissions, Report to Congress*, April 2010. Contributing author. (https://ntl.bts.gov/lib/32000/32700/32779/DOT_Climate_Change_Report_-_April_2010_-_Volume_1_and_2.pdf)
12. Science Advisory Board, Review of the EPA's draft Report on the Environment 2014, EPA-SAB-15-007, Prepared by Advisory Panel on EPA's Report on the Environment 2014 for Science Advisory Board, U.S. Environmental Protection Agency, Washington, DC, February 27, 2015.
13. U.S. EPA, Risk Assessment Forum White Paper: Probabilistic Risk Assessment Methods and Case Studies, EPA/100/R-14/004, Office of the Science Advisor, U.S. Environmental Protection Agency, Washington, DC, July 25, 2014, (Co-Lead) (<http://www.epa.gov/osa/raf/prawhitepaper/pdf/raf-pra-white-paper-final.pdf>).

Reports of the Clean Air Scientific Advisory Committee (CASAC)

1. Diex-Roux, A., and H.C. Frey (2015), CASAC Review of the EPA's Review of the Primary National Ambient Air Quality Standards for Nitrogen Dioxide: Risk and Exposure Assessment Planning Document, EPA-CASAC-15-002, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, September 9, 2015.
2. Diex-Roux, A., and H.C. Frey (2015), CASAC Review of the EPA's Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (Second External Review Draft – January 2015), EPA-CASAC-15-001, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, September 9, 2015.

3. Frey, H.C., and G.A. Allen (2014), Review of EPA's Recommendation for an Additional Federal Reference Method for Ozone: Nitric Oxide-Chemiluminescence, EPA-CASAC-14-007, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, July 28, 2014.
4. Frey, H.C., and A. Diez-Roux (2014), CASAC Review of the EPA's Integrated Review Plan for the Primary National Ambient Air Quality Standard for Sulfur Dioxide (External Review Draft - March 2014), EPA-CASAC-14-006, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, July 24, 2014.
5. Frey, H.C. (2014), CASAC Review of the EPA's Health Risk and Exposure Assessment for Ozone (Second External Review Draft – February, 2014), EPA-CASAC-14-005, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, July 1, 2014.
6. Frey, H.C. (2014), CASAC Review of the EPA's Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, EPA-CASAC-14-004, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, June 26, 2014.
7. Frey, H.C. (2014), CASAC Review of the EPA's Welfare Risk and Exposure Assessment for Ozone (Second External Review Draft), EPA-CASAC-14-003, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, June 18, 2014.
8. Frey, H.C. (2014), CASAC Review of the EPA's Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (First External Review Draft – November 2013), EPA-CASAC-14-002, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, June 10, 2014.
9. Frey, H.C. (2014), CASAC Review of the EPA's Integrated Review Plan for the Primary National Ambient Air Quality Standards for Nitrogen Dioxide (External Review Draft), EPA-CASAC-14-001, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Gina McCarthy, U.S. Environmental Protection Agency, Washington, DC, June 10, 2014.
10. Frey, H.C. (2013), Consultation on the EPA's Draft Plan for the Development of the Integrated Science Assessment for Nitrogen Oxides – Health Criteria (May 2013 Draft), EPA-CASAC-13-006, Letter Report from the Clean Air Scientific Advisory Committee to Acting Administrator Bob Perciasepe, U.S. Environmental Protection Agency, Washington, DC, June 18, 2013.
11. Frey, H.C. (2013), CASAC Review of the EPA's Policy Assessment for the Review of the Lead National Ambient Air Quality Standards (External Review Draft – January 2013), EPA-CASAC-13-005, Letter Report from the Clean Air Scientific Advisory Committee to Acting Administrator Bob Perciasepe, U.S. Environmental Protection Agency, Washington, DC, June 4, 2013.
12. Frey, H.C. (2013), CASAC Review of the EPA's Integrated Science Assessment for Lead (Third External Review Draft – November 2012), EPA-CASAC-13-004, Letter Report from the Clean Air Scientific Advisory Committee to Acting Administrator Bob Perciasepe, U.S. Environmental Protection Agency, Washington, DC, June 4, 2013.

13. Frey, H.C., and J.M. Samet (2012), CASAC Review of the EPA's Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (First External Review Draft – August 2012), EPA-CASAC-13-003, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, November 26 2012.
14. Frey, H.C., and J.M. Samet (2012), CASAC Review of the EPA's Health Risk and Exposure Assessment for Ozone (First External Review Draft - Updated August 2012) and Welfare Risk and Exposure Assessment for Ozone (First External Review Draft - Updated August 2012), EPA-CASAC-13-002, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, November 19, 2012.
15. Frey, H.C., and J.M. Samet (2012), CASAC Review of the EPA's Integrated Science Assessment for Ozone and Related Photochemical Oxidants (Third External Review Draft – June 2012), EPA-CASAC-13-001, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, November 14, 2012.
16. Samet, J.M., and H.C. Frey (2012), CASAC Review of the EPA's Integrated Science Assessment for Lead (Second External Review Draft – February 2012), EPA-CASAC-12-005, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, July 20, 2012.
17. Frey, H.C., and J.M. Samet (2011), CASAC Review of the EPA's Integrated Science Assessment for Lead (First External Review Draft – May 2011), EPA-CASAC-12-002, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, December 9, 2011.
18. Frey, H.C. (2011), Consultation on EPA's Review of the National Ambient Air Quality Standards for Lead: Risk and Exposure Assessment Planning Document, EPA-CASAC-12-001, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, October 14, 2011.
19. Frey, H.C. (2011), Consultation on EPA's Draft Integrated Review Plan for the National Ambient Air Quality Standards for Lead, EPA-CASAC-11-007, Letter Report from the Clean Air Scientific Advisory Committee to Administrator Lisa P. Jackson, U.S. Environmental Protection Agency, Washington, DC, May 25, 2011.

NOTE: Have contributed to many other CASAC Reports not listed here. Those listed above are from review panels or the chartered CASAC while chaired by Dr. Frey.

INVITED RESEARCH PRESENTATIONS (SEMINARS)

1. "Probabilistic Modeling of Innovative Clean Coal Technologies," Environmental Institute Seminar Series, Carnegie-Mellon University, Pittsburgh, Pennsylvania, March 1, 1991.
2. "Modeling Uncertainties in Energy Conversion Technologies," Special Seminar, Department of Engineering-Economic Systems, Stanford University, Stanford, California, October 21, 1991.
3. "Managing Advanced Energy and Environmental Technologies," Department of Engineering Management, The George Washington University, Washington, D.C., February 4, 1992.
4. "Managing Advanced Energy and Environmental Control Technologies," School of Civil and Environmental Engineering, Cornell University, Ithaca, New York, April 23, 1992.

5. "Some Considerations in Quantitative Uncertainty Analysis," Symposium on Monte Carlo Simulation in Exposure Assessment, U.S. Environmental Protection Agency, Washington, DC, June 20, 1992.
6. "Quantitative Uncertainty Analysis Using Monte Carlo Techniques," Regulatory Analysis Branch, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC, July 21, 1992.
7. "Quantitative Analysis of Uncertainty and Variability: Motivations, Methods, and Needs," Final Presentation of the American Association for the Advancement of Science (AAAS) and U.S. Environmental Protection Agency Environmental Science and Engineering Fellows Program, U.S. Environmental Protection Agency, Washington, DC, August 6, 1992.
8. "Quantitative Analysis of Variability and Uncertainty in Exposure Assessment," Graduate Seminar Series, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, Pennsylvania, October 1, 1992.
9. "Modeling and Assessment of Advanced Coal Based Power Generation Systems," Coal Technology Group, Pittsburgh Section, American Chemical Society, Pittsburgh, Pennsylvania, October 29, 1992.
10. "A Probabilistic Approach to Engineering-Economic Evaluations," Electric Power Research Institute, Palo Alto, California, December 2, 1992.
11. "Probabilistic Engineering-Economic Evaluation of Clean Coal Technologies," Guest Lecture, Department of Civil Engineering, University of California at Berkeley, December 4, 1992.
12. "Research Planning for Air Pollution Control Technologies," Department of Civil and Environmental Engineering, University of Houston, Houston, Texas, January 22, 1993.
13. "Research Planning for Energy and Environmental Control Technologies," Environmental Seminar, RAND Corporation, Santa Monica, California, February 11, 1993.
14. "Research and Strategic Planning for Clean Coal Technologies," Department of Systems Engineering, Case Western Reserve University, Cleveland, Ohio, March 23, 1993.
15. "Quantitative Analysis of Uncertainty in Environmental Policy Problems," Harvard University, School of Public Health, Boston, Massachusetts, March 25, 1993.
16. "Probabilistic Evaluation of Air Pollution Control Technologies," Department of Civil Engineering, University of Texas, Austin, Texas, March 30, 1993.
17. "Anticipating Advanced Process Technology Cost Growth and Performance Shortfall Using Probabilistic Engineering Models," Independent Project Analysis, Inc., Reston, Virginia, April 22, 1993.
18. "Modeling and Assessment of Advanced Energy and Environmental Control Technologies," Department of Civil and Environmental Engineering, Florida International University, Miami, Florida, May 5, 1993.
19. "Probabilistic Engineering Modeling and Assessment of Advanced Environmental Control Technologies," Department of Civil Engineering, North Carolina State University, Raleigh, May 13, 1993.
20. "Dealing with Uncertainty and Variability in Probabilistic Exposure Assessment," Society for Risk Analysis, Research Triangle Chapter, Research Triangle Park, North Carolina, April 28, 1994.
21. "Modeling and Assessment of Air Pollutant Emissions and Controls from Stationary and Mobile Sources," Air Quality Section, Department of Environmental Management, State of North Carolina, Raleigh, May 6, 1994.
22. "Dealing with Uncertainty in Engineering-Economic Evaluations of Energy Technologies," Nuclear Energy Division, Electric Power Research Institute, Palo Alto, California, May 26, 1994.
23. "Developing Distributions for Probabilistic Exposure Assessments," Harvard Center for Risk Analysis, Boston, Massachusetts, June 2, 1994. Co-author with A.C. Cullen.
24. "Dealing with Variability and Uncertainty in Probabilistic Exposure Assessment," Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Durham, North Carolina, March 9, 1995.
25. "Transportation and Air Quality," Charlotte Department of Transportation, Charlotte, North Carolina,

- September 7, 1995.
26. "Transportation and Air Quality," North Carolina Department of Transportation, Raleigh, North Carolina, December 12, 1995.
 27. "Treatment of Uncertainty in the Tracking and Analysis Framework," Argonne National Laboratory, Argonne, Illinois, August 29, 1995.
 28. "Research Planning for Advanced Energy Technologies," EC2 Subcommittee Meeting, U.S. Department of Energy National Laboratories, Dallas, Texas, September 12, 1995.
 29. "Remote Sensing of Mobile Source Air Pollution," NC Department of Transportation, Raleigh, North Carolina, February 20, 1996.
 30. "Probabilistic Modeling of Highway Mobile Source Emissions," U.S. Environmental Protection Agency, Ann Arbor, Michigan, May 1996.
 31. "Air Pollution Control," Department of Biological and Agricultural Engineering, North Carolina State University, Raleigh, September 20, 1996.
 32. "Quantitative Analysis of Variability and Uncertainty in Emissions Estimates," U.S. Environmental Protection Agency, Washington, DC, September 9, 1998.
 33. "Quantification of Variability and Uncertainty in Emission Factors and Inventories," Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, February 11, 1999.
 34. "Quantitative Analysis of Variability and Uncertainty in Emissions Inventories," Lawrence Berkeley National Laboratory, Berkeley, CA, October 20, 1999.
 35. "Quantitative Analysis of Variability and Uncertainty in Exposure and Risk Assessment," U.S. Department of Agriculture, Washington, DC, July 12, 2000.
 36. "Quantification of Variability and Uncertainty in Emissions Estimation," Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, February 15, 2001.
 37. "Evaluation of the Effect of Traffic Signalization on Real-World Emissions Using a Portable Instrument," Air Quality Roundtable, Center for Transportation and the Environment, NC State University, Raleigh, NC, November 6, 2001 (Co-authors: N.M. Rouphail, A. Unal, and J.D. Colyar).
 38. "Energy and Environmental Systems," Presented for Oak Ridge National Laboratory at North Carolina State University, May 14, 2002.
 39. "Sensitivity Analysis of Food Safety Risk Models," Risk Forum, Office of Risk Assessment and Cost-Benefit Analysis, U.S. Department of Agriculture, Washington, DC, May 21, 2002.
 40. "Mobile Source Emissions Modeling and Policy," Transportation Founders Fund Seminar Series, Institute for Transportation Research and Education, North Carolina State University, Raleigh, NC, September 4, 2002.
 41. "Modeling and Evaluation of Energy Systems at Plant, Life Cycle, and National Scales," Brookhaven National Laboratory, Brookhaven, NY, October 22, 2002.
 42. "Modeling and Evaluation of Energy System at Vehicle, Plant, Life Cycle, and National Scales," Energy Technology Advisory Council, State Energy Office, State of North Carolina, held at McKimmon Center, North Carolina State University, Raleigh, NC, October 28, 2002.
 43. "Methodology for Developing Modal Emission Rates for EPA's Multi-Scale Motor Vehicle and Equipment Emission System," U.S. Environmental Protection Agency Workshop on the MOVES Model, Ann Arbor, MI, November 6, 2002.
 44. "Quantification of Uncertainty in Emission Factors, Emission Inventories, and Air Quality Models," U.S. Environmental Protection Agency, Research Triangle Park, NC, March 26, 2003.
 45. "Quantification of Uncertainty in Environmental Models," U.S. Environmental Protection Agency, Research Triangle Park, NC, May 13, 2003.

46. "Methods for Quantification of Uncertainty in Emission Inventories," Invited presentation at Carbonaceous Particulate Matter Science Assessment Workshop, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 14, 2004.
47. "Probabilistic Techniques in Exposure Assessment," Invited presentation at Colloquium on Probabilistic Methods, U.S. Environmental Protection Agency, Washington, DC, April 21, 2004.
48. "Methods and Applications of Uncertainty and Sensitivity Analysis for Models Used in Regulatory Processes," Invited presentation to Committee on Models in the Regulatory Decision Process, National Research Council, Washington, DC., December 2, 2004.
49. "Methods and Applications of Uncertainty and Sensitivity Analysis," Invited presentation at Workshop on Impacts of Global Climate Change on Hydraulics and Hydrology and Transportation, Invited presentation at National Research Council, Washington, DC, March 7, 2005.
50. "Measurement and Modeling of Real-World In-Use Emissions of Light Duty and Heavy Duty Vehicles," Invited Presentation at Research Triangle Chapter of the Air and Waste Management Association, Raleigh, NC, April 19, 2005.
51. "Measurement, Evaluation, and Comparison of In-Use Emissions of Petroleum Diesel and B20 Biodiesel-Fueled Dump Trucks," Invited Presentation at Raleigh Engineers Club, Raleigh, NC, May 16, 2005.
52. "A Perspective on the State of the Science of Probabilistic Assessment for Human Exposure," Invited Presentation at Society for Toxicology Workshop on Probabilistic Risk Assessment, Washington, DC, July 25, 2005.
53. "Probabilistic Exposure Analysis," Invited Seminar, Department of Toxicology, North Carolina State University, Raleigh, NC, September 13, 2005.
54. "Applications of Statistics in Environmental Engineering," Invited Seminar, Department of Statistics, North Carolina State University, Raleigh, NC, January 26, 2006.
55. "Best Practices for Reducing Energy Use and Greenhouse Gas (GHG) Emissions in Freight Transportation," Invited Seminar, Instituto Superior Tecnico, Lisbon, Portugal, May 15, 2006.
56. "Comparison of Real-World Fuel Use and Emissions for Dump Trucks Fueled with B20 Biodiesel Versus Petroleum Diesel," Invited Seminar, Instituto Superior Tecnico, Lisbon, Portugal, May 15, 2006.
57. "Review of the OMB Proposed Risk Assessment Bulletin and Its Implications," Invited Seminar, Research Triangle Chapter of the Society for Risk Analysis, Research Triangle Park, NC, October 30, 2006.
58. "Best Practices for Greenhouse Gas Emissions Reductions in Freight Transportation," Invited Seminar, *Talking Freight seminar series*, Federal Highway Administration, Washington, DC, via webinar (from office at EPA in RTP, NC), January 17, 2007.
59. "Quantification of Uncertainty in Air Pollutant Emission Inventories," Invited Seminar, Hong Kong University of Science and Technology, Hong Kong, P.R. China, January 24, 2007.
60. "Quantification of On-Road Vehicle Emissions Based on Real-World In-Use Measurements," Invited Seminar, Hong Kong University of Science and Technology, Hong Kong, P.R. China, January 26, 2007.
61. "Quantification of Uncertainty in Air Pollutant Emission Inventories," Invited Seminar, South China University of Technology, Guangzhou, P.R. China, January 29, 2007.
62. "Quantification of Uncertainty in Air Pollutant Emission Inventories," Invited Seminar, Tsinghua University, Beijing, P.R. China, January 30, 2007.
63. "Quantification of On-Road Vehicle Emissions Based on Real-World In-Use Measurements," Invited Seminar, Tsinghua University, Beijing, P.R. China, January 30, 2007.
64. "Analysis of Coupled Uncertainties in Modeling Human Exposures and Dose to Ambient Pollutants," National Exposure Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC, February 12, 2007. With Haluk Ozkaynak.
65. "Probabilistic Exposure Assessment," Guest Lecture, Toxicology risk assessment course, Department of Toxicology, NC State University, Raleigh, NC, March 1, 2007.

66. "Best Practices for Greenhouse Gas Emissions Reductions in Freight Transportation," Research Triangle Chapter of Air & Waste Management Association, Research Triangle Park, NC, March 20, 2007. With Po-Yao Kuo.
67. "Life Cycle Inventory Energy Use and Emissions for Biodiesel Versus Petroleum Diesel Fuels," Research Triangle Chapter of Air & Waste Management Association, Research Triangle Park, NC, March 20, 2007. With Shih-hao Pang.
68. "Speed- and Facility-Specific Emission Estimates for On-Road Light-Duty Vehicles based on Real-World Speed Profiles," Research Triangle Chapter of Air & Waste Management Association, Research Triangle Park, NC, April 17, 2007. With Haibo Zhai.
69. "In-use Emissions and Fuel Use for Selected Motor Graders Based on Real-World Duty Cycles," Research Triangle Chapter of Air & Waste Management Association, Research Triangle Park, NC, April 17, 2007. With Kangwook Kim.
70. "Probabilistic Risk Assessment: Methodology and Relevance to Decision-Making," Department of Environmental Science and Engineering, Peking University, Beijing, P.R. China, September 23, 2007.
71. "Methods for Characterizing Variability and Uncertainty in Exposure and Risk Assessment," Plenary Session Invited Presentation, First International Conference on Risk Analysis and Crisis Response, Shanghai, China, September 25, 2007.
72. "Measurement, Modeling, and Evaluation of Vehicle Fuel Use and Emissions for Biofuels versus Petroleum Fuels: Case Studies for Biodiesel and Ethanol," Department of Mechanical Engineering, University of Aveiro, Aveiro, Portugal, November 7, 2007.
73. "Measurement, Modeling, and Evaluation of Vehicle Fuel Use and Emissions for Biofuels versus Petroleum Fuels: Case Studies for Biodiesel and Ethanol," Department of Mechanical Engineering, Department of Mechanical Engineering, Instituto Superior Técnico, Lisbon, Portugal, November 9, 2007.
74. "Probabilistic Risk Assessment: Methodology and Relevance to Decision-Making," Water Resources and Environmental Engineering Program, Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, November 26, 2007.
75. "Methods and Examples for Assessment of Human Exposure to Air Pollutants," Hong Kong Environmental Protection Department, Hong Kong, December 19, 2007.
76. "Methods and Examples for Assessment of Human Exposure to Air Pollutants," Guangdong Meteorological Bureau, Panyu, Guangzhou, P.R. China, December 20, 2007.
77. "Identification and Evaluation of Potential Best Practices for Greenhouse Gas Emissions Reductions in Freight Transportation," Chair's Air Pollution Seminar, Air Resources Board, California Environmental Protection Agency, Sacramento, California, January 9, 2008.
78. "Evaluation of Effects of Fuels, Vehicle Technology, and Traffic Control Measures on Real World Fuel Use, Greenhouse Gas Emissions, and Air Pollutant Emissions of Onroad Vehicles," Invited Presentation at International Seminar on Environment and Transportation Management, Taipei, Taiwan, February 21, 2008 (delivered via web and teleconference).
79. "Real-World Vehicle Activity, Fuel Use, and Emissions," Invited Presentation at the Luso-American Foundation (FLAD), Lisbon, Portugal, March 6, 2008.
80. "Measurement and Modeling of Real-World Activity, Fuel Use, and Emissions of Onroad and Nonroad Vehicles: A Comparison of B20 Biodiesel and Petroleum Diesel," Department of Civil and Environmental Engineering, Duke University, Durham, NC, January 7, 2009.
81. "Measurement and Modeling of Real-World Activity, Fuel Use, and Emissions of Onroad and Nonroad Vehicles: A Comparison of B20 Biodiesel and Petroleum Diesel," Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, NC, February 18, 2009.
82. "Vehicle Energy and Emissions Research at NC State," Advisory Council Meeting, Institute for Transportation Research and Education, North Carolina State University, Raleigh, NC, April 16, 2009.

83. "Evaluating the Performance, Emissions, and Cost Of Power Plants Using the Integrated Environmental Control Model," NC Division of Air Quality, Raleigh, NC, November 2, 2009.
84. "Measurement and Modeling of Real-World Activity, Fuel Use, and Emissions of Onroad Vehicles," North Carolina Association of Municipal Planning Organizations, January 28, 2010.
85. "Method and Example Case Study for Source Apportionment of PM_{2.5} Exposure," Invited seminar with Montse Fuentes at U.S. Environmental Protection Agency, Research Triangle Park, NC, April 28, 2010.
86. "NO_x Emissions: Where Have We Been and Where are We Going?," Denitrification Research Coordination Network (www.denitrification.org), Invited presentation at Workshop on Nitrogen Assessment Science in the USA, Boulder, Colorado, May 18, 2010.
87. "Uncertainty in Emissions Estimates," State Implementation Plan Coordination Workshop, Mid-Atlantic Regional Air Management Association, Baltimore, MD, September 27, 2010.
88. "Framework for Context-Sensitive Spatially- and Temporally-Resolved Onroad Mobile Source Emission Inventories," U.S. Environmental Protection Agency, Research Triangle Park, NC, November 16, 2010 (with N.M. Rouphail, H. Hu, B. Liu, and X. Song).
89. "Life Cycle Inventory Energy Consumption and Emissions of Greenhouse Gases and Other Pollutants for Biofuels Versus Petroleum Fuels," Division of Environment, Hong Kong University of Science and Technology, December 14, 2010.
90. "More than Ten Years Experience in Field Measurements of Onroad and Nonroad Vehicles Using Portable Emissions Measurement Systems," 2010 International Workshop on Mobile Source Emission Testing and Modeling, Xiamen, P.R. China, December 18, 2010.
91. "Measurement of Onroad and Nonroad Vehicles Using Portable Emissions Measurement Systems," PEMS: The Latest Tools and Techniques for In-Use Measurements, University of California at Riverside, March 24, 2011.
92. "Overview of Research Activities in Transportation-Related Emissions and Exposure," Department of Mechanical Engineering, Instituto Superior Tecnico, Lisbon, Portugal, July 25, 2011.
93. "Estimation and Apportionment of Inter-Individual Variability in Human Exposure to Fine Particles," 3rd International Workshop on Regional Air Quality Improvement in Rapidly Developing Economic Regions, Guangzhou, China, November 12, 2011.
94. "Methods for Environmental Exposure and Risk Analysis," Invited Lecture, State Key laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, Beijing, China, November 15, 2011.
95. "Real-World Vehicle Emissions and In-Vehicle Exposure to Air Pollutants," Department of Energy, Environment, and Chemical Engineering, Washington University, St. Louis, MO, February 24, 2012.
96. "Apportionment of Human Exposure to Fine Particulate Matter Among Indoor and Outdoor Emission Sources and Processes," Technologies to Inform Chemical Safety Sciences, ICCA-LRI and UK HPA Workshop, Budapest, Hungary, June 12, 2012.
97. "Development and Evaluation of a Simplified Version of MOVES for Coupling with a Traffic Simulation Model," MOVES User Group, Federal Highway Administration, Baltimore, MD (via webinar), February 14, 2013.
98. "Energy and Security: Transportation Fuels and the Environment," Triangle Institute for Security Studies, North Carolina State University, February 18, 2013.
99. "Moving Toward Sustainability in Transportation," Sustainable Energy Systems PhD Program, Instituto Superior Técnico, Lisbon, Portugal, October 10, 2013
100. "Behind the Invisible Curtain at the U.S. EPA Clean Air Scientific Advisory Committee (CASAC): What CASAC Does and How," Air & Waste Management Association, Webinar, January 8, 2014.
101. "Transportation Energy Use, Emissions, Air Quality, Human Exposure & Health Impact," Invited Plenary Presentation, The 4th International Workshop on Regional Air Quality Management in Rapidly Developing Economic Regions, Hong Kong, January 14, 2014.

102. "Development of Vehicle Emissions Models Based on Real-World Emissions Measurements," Environmental Protection Department, Government of Hong Kong Special Administrative Region, Hong Kong, January 27, 2014.
103. "Locomotive Biofuel Study," American Association of Railroads, Washington, DC, January 28, 2014 (via webinar).
104. "Measurement and Modeling of Micro- and Meso-Scale Real-World Onroad Vehicle Activity and Emissions," University of Hong Kong and Hong Kong Society for Transportation Studies, February 10, 2014
105. "Scientific Basis of the US National Ambient Air Quality Standards (NAAQS)," National Environmental Agency, Singapore, February 27, 2014
106. "Perspectives on Air Quality Indices: Examples from the U.S. and Hong Kong," National Environmental Agency, Singapore, February 27, 2014.
107. "Measurement and Modeling of Human Exposure to Air Pollution," National University of Singapore, February 28, 2014.
108. "Framework for Context-Sensitive Spatially- and Temporally-Resolved Onroad Mobile Source Emissions Inventories," U.S. Environmental Protection Agency, Ann Arbor, MI, March 5, 2014 (via webinar, with Nagui Rouphail, Xuesong Zhou, Bin Liu, Hao Lei, Jeffrey Taylor, Shams Tanvir)
109. "Microenvironmental Approach to Quantification of Human Exposure to Air Pollution," Hong Kong University of Science and Technology, March 20, 2014.
110. "Measurement and Modeling of Real-World Onroad Vehicle Activity and Emissions," Tsinghua University, Beijing, China, April 3, 2014.
111. "Linkages Between Air Quality, Exposure, and Health Effects: Scientific Basis of the US National Ambient Air Quality Standards (NAAQS) and Air Quality Index," U.S. Consulate and Civic Exchange, Hong Kong, April 9, 2014. With Prof. Alexis Lau of Hong Kong University of Science and Technology.
112. "Conceptual Approach to Quantitative Evaluation of Transportation Emission Reduction Program Effectiveness," Environmental Protection Department, Hong Kong, May 7, 2014.
113. "Measurement and Modeling of Real-World Onroad Vehicle Activity and Emissions," Environmental Protection Administration, Taipei, Taiwan, May 9, 2014.
114. "Scientific Basis of the US National Ambient Air Quality Standards (NAAQS)," Environmental Protection Administration, Taipei, Taiwan, May 9, 2014.
115. "Conceptual Approach to Scientific Development and Evaluation of Effective Air Quality Management Strategies," Environment Bureau, Hong Kong, June 9, 2014.
116. "Advances in Modeling of Human Exposure to Air Pollution," King's College, London, England, June 23, 2014.
117. "Measurement of Pedestrian and Mass Transit Transportation Microenvironment Air Pollution Exposure Concentrations in Hong Kong," Instituto Superior Tecnico, Lisbon, Portugal, September 11, 2014.
118. "Measurement of Human Exposure to Air Pollution for Public Transportation in Hong Kong," Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, October 17, 2014.
119. "Measurement and Evaluation of Transport Microenvironment Air Pollutant Exposure Concentrations in Hong Kong," Research Triangle Chapter, Air & Waste Management Association, held at U.S. Environmental Protection Agency, Research Triangle Park, October 21, 2014.
120. "Air Quality Science and Policy," Research Triangle Chapter, Air & Waste Management Association, Research Triangle Park, NC, December 2, 2014.
121. "Review and Revision of Air Quality Standards in the United States," South China University of Technology, Guangzhou, China, December 10, 2014.

122. "Science and Decisions Regarding National Ambient Air Quality Standards," How Government Works Seminar Series, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA, February 4, 2015 (by webinar).
123. "Measurement of Transport Microenvironment Air Pollutant Exposure Concentrations in Hong Kong," University of Surrey, Guildford, United Kingdom, March 9, 2015.
124. "Overview of Approaches to Air Pollution Control and Air Quality Management in the United States," Invited presentation at workshop of air pollution control officials, Sichuan Province, P.R. China, Meishan, China, July 10, 2015.
125. "Real-World Evaluation of Biofuels in Onroad and Nonroad Vehicles," Southeast Diesel Collaborative, Region IV, U.S. Environmental Protection Agency, Atlanta, GA, August 18, 2015.
126. "NC is to VA as a Prius is to a 1972 Cadillac: Don't Believe Everything You Read," Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, September 4, 2015. With Joe DeCarolus.
127. "The Role of Science and Scientific Advice in Review of the Ozone NAAQS," Invited talk at Annual Meeting of the Association of Air Pollution Control Agencies, Raleigh, NC, September 17, 2015.
128. "Scientific Advice to EPA on the National Ambient Air Quality Standard for Ozone," Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, September 25, 2015.
129. "Measurement and Modeling of Real-World Onroad Vehicle Activity and Emissions," 2015 Warren Lecture Series, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota, Minneapolis, MN, October 16, 2015. Available on YouTube at: <https://www.youtube.com/watch?v=OJuqO4xqAwQ&list=PLBh1phQvz8N9atM1rgx5hW6bAvbjSqtRF>
130. "Measurement and Modeling of Real-World Onroad Vehicle Activity and Emissions," Korea Institute of Civil Engineering and Building Technology, Ilsan, Korea, November 5, 2015.
131. "Uncertainty in Emission Estimates," Greenhouse Gas and Inventory Center, Seoul, Korea, December 6, 2015.
132. "Scientific Advice to the EPA on the National Ambient Air Quality Standard for Ozone," Sierra Club, Raleigh, NC, November 17, 2015.
133. "Needs and Opportunities to Update, Supplement, and/or Elaborate IPCC Inventory Guidelines on Uncertainty," IPCC Expert Meeting for Technical Assessment of IPCC Inventory Guidelines (Cross-sectoral issues), Wollongong, Australia, April 27, 2016.
134. "Current Issues in Emission Inventories," Appraisal Center for Environment and Engineering, Ministry of Environmental Protection, Beijing, China, July 28, 2016.
135. "Energy and Environmental Aspects of Sustainable Mobility," at IV Seminário Internacional Mobilidade e Transportes: Pensado as Cidades do Futuro, Brasília, Brazil, October 24, 2016 (Via Webinar).
136. "Quantification of the Continuum Between Vehicle Activity and Human Exposure to Traffic-Related Air Pollution," Presented at 41st Annual A&WMA Information Exchange, Durham, NC, December 6, 2016.
137. "Measurement and Modeling of Onroad and Nonroad Vehicle Emissions," Motor Vehicle/Vessel Emissions Control Workshop 2016, Hong Kong Polytechnic University, Hong Kong, December 15, 2016.
138. "Source-to-Exposure Continuum for Traffic-Related Air Pollution," Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, January 20, 2017.
139. "Denying the Denialists: Uncovering the Methods and Institutions of Climate Change Denial," Environmental, Water, and Coastal Engineering Seminar Series, Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, April 28, 2017.
140. "EPA Integrated Science Assessment of NO₂: Clean Air Scientific Advisory Committee Review and Recommendations," Annual Conference, Health Effects Institute, Alexandria, VA, May 2, 2017.

141. "Academia 101: How to Apply for and Get a Faculty Job," Annual Meeting, Air & Waste Management Association, Pittsburgh, PA, June 6, 2017.
142. "Framework for Context-Sensitive Spatially-and Temporally-Resolved Onroad Mobile Source Emissions Inventories," EPA Science to Achieve Results (STAR) Webinar Series: Emissions Research to Improve Decision-Making, June 12, 2017.
143. "Measurement and Modeling of Air Pollution Exposure Concentrations," Toxicology Program Seminar, North Carolina State University, Raleigh, NC, August 29, 2017.
144. "Identifying and Transcending Ideological Barriers in the Climate Change Public Policy Debate," Finding Common Ground on Climate Change Mitigation and Adaptation, Air & Waste Management Association, Arlington, VA, October 10-11, 2017.
145. "Trends in Emissions of and Exposure to Air Pollution from Vehicles," Clean Tech Luncheon Seminar, Institute for the Environment, University of North Carolina, Chapel Hill, NC, November 1, 2017.
146. "The Growing Role of Portable Emission Measurement Systems in Answering Technical and Policy Questions About Vehicle Emissions," Invited Plenary Presentation, 5th International Symposium on Regional Air Quality Management in Rapidly Developing Regions, Guangzhou, China, November 16-19, 2017.
147. "Exposure to Air Pollution and Health Implications," Regional Air Quality Management Forum, Hong Kong University of Science and Technology, Hong Kong, November 20, 2017.
148. "Trends in On-road Transportation Energy, Emissions, and Impacts," 42nd Annual A&WMA/ASME Information Exchange, Durham, NC, December 12, 2017.
149. "Proposed Updates to MOVES: Refining or Adding Vehicle Source Types," MOVES Model Review Work Group, Mobile Sources Technical Review Subcommittee, Clean Air Act Advisory Committee, U.S. Environmental Protection Agency, Ann Arbor, MI, March 7, 2018 (via webinar).
150. "Methods and Applications for Real-World Vehicle Emission Measurements Using Portable Emission Measurement Systems," Jinan University, Guangzhou, China, March 12, 2018.
151. "The Risks and Rewards of Science Advocacy," Global Change Seminar, Southeast Climate Science Center Global Change Fellows, North Carolina State University, Raleigh, NC, April 12, 2018. [On Panel with Mr. Bill Holman, Dr. Katie Mack, and Dr. Martha Reiskind]
152. "Trends in Onroad Transportation Energy and Emissions" The 48th Annual A&WMA Critical Review, 111th Annual Conference and Exhibition, Air & Waste Management Association, Hartford, CT, June 26, 2018.
153. "Measurement and Modeling of Onroad Vehicle Air Pollutant Emissions and Exposure," Division of Environment and Sustainability, Hong Kong University of Science and Technology, July 19, 2018.
154. "Trends in Onroad Transportation Energy and Emissions," Department of Civil Engineering and Institute of Transport Studies, Hong Kong University, July 20, 2018
155. "Measurement and Modeling of Real-World Vehicle Energy Use and Emissions," Department of Civil and Environmental Engineering, Hong Kong Polytechnic University, July 23, 2018.
156. "Measurement and Modeling of Real-World Vehicle Energy Use and Emissions," School of Highways, Chang'an University, Xi'an, China, July 25, 2018.
157. "Trends in Onroad Transportation Energy and Emissions," School of Highways, Chang'an University, Xi'an, China, July 25, 2018.
158. "Trends in Onroad Transportation Energy and Emissions," Transportation and Air Quality Committee 2018 Summer Meeting, Transportation Research Board, National Academies, Keck Center, Washington, DC, July 31, 2018.
159. "Measurement and Modeling of Vehicle Energy Use, Emissions, and Air Pollutant Exposures," Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, NC, August 3, 2018.

160. "Trends in Onroad Transportation Energy and Emissions," Civil Engineering 2050 Seminar Series, Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, November 5, 2018.
161. "Trends in Onroad Transportation Energy and Emissions: Follow-up to the 2018 Critical Review," Webinar, Air & Waste Management Association, November 8, 2018. Main presenter. Discussants: Susan Collet, Alberto Ayala, Eric Stevenson, Rashid Shaikh. Moderator: Sam Altshuler.
162. "Trends in Vehicle Emissions Based on Real-World Measurements," Invited Presentation, Motor Vehicle/Vessel Emissions Control Workshop 2019, Chengdu, China, January 17, 2019.
163. "Measurement and Modeling of Human Exposure to Air Pollution," Invited Keynote Presentation, 2019 International Symposium on Air Quality and Health, Chang Yung-Fa Foundation International Convention Center, Taipei, Taiwan, January 30, 2019.
164. "Regulatory Rollback at EPA Ignores Science and Threatens Public Health," Environmental, Water, and Coastal Engineering Seminar Series, Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, February 8, 2019.
165. "Measurement and Modeling of Onroad Vehicle Air Pollutant Emissions and Exposure," Invited Seminar, McKetta Department of Chemical Engineering, University of Texas at Austin, Austin, TX, February 12, 2019.
166. "Trends in Onroad Transportation and Emissions," Invited Plenary Talk, Transportation, Air Quality, and Health Symposium, Center for Advancing Research in Transportation Emissions, Energy, and Health, Austin, TX, February 19, 2019.
167. "Trends in Mobile Source Emissions," Invited Keynote Presentation, Mobile Emissions Training Workshop, Mid-Atlantic Regional Air Management Association, Hunt Valley, MD, March 19, 2019.
168. "Real-World Emissions from In-Use Diesel-Powered Locomotives," Eastern Regional Technical Advisory Committee, Rail Work Group, Webinar, March 21, 2019.
169. "Quantification of Variability in Real-World Vehicle Emissions," Jinan University, Gangzhou, China, July 15, 2019.
170. "Ad Hoc Changes by EPA Undermine Science Review of Air Quality Standards," North Carolina Chapter, Sierra Club, Raleigh, NC, September 17, 2019.
171. "Regulatory Rollback at EPA Ignores Science and Threatens Public Health," Forestry and Environmental Resources Seminars, College of Natural Resources, North Carolina State University, Raleigh, NC, September 23, 2019.
172. "Recent Developments in the Scientific Review of the National Ambient Air Quality Standards for Particulate Matter," Particulate Matter: Spotlight on Health Protection, Bay Area Air Quality Management District, San Francisco, CA, October 28, 2019.
173. "Taking the Science out of Scientific Review of Air Quality Standards," Annual Meeting, American Public Health Association, Philadelphia, PA, November 5, 2019.
174. "Measurement and Modeling of Transportation Energy Use, Emissions, and Exposure," New Insights in Atmospheric Science, Office of Research and Development, U.S. Environmental Protection Agency, Research Triangle Park, NC, November 20, 2019.
175. "Recent Developments in Measurement and Modeling of Transportation Energy Use and Emissions at NC State," 2019 A&WMA/ASME Information Exchange, Research Triangle Park, NC, December 4, 2019.
176. "Discussion of EPA's Proposal to Regulate the Use of Science in Regulatory Decision Making," Research Triangle Chapter, Society for Risk Analysis, May 13, 2020 (via webinar). Presented by H. Christopher Frey, John Bachmann, and Gretchen Goldman.
177. "[EPA Disregards Science and the Law in Proposing to Retain NAAQS for Particulate Matter That Do Not Protect Public Health](#)," Science Response Network, University of California at San Francisco (via webinar), May 26, 2020.

178. "EPA Disregards Science and the Law in Proposing to Retain NAAQS for Particulate Matter That Do Not Protect Public Health," National Association of Clean Air Agencies (via webinar), June 1, 2020.
179. "The Circuitous Path to EPA's Proposal to Retain the Current National Ambient Air Quality Standards for Particulate Matter," Research Triangle Chapter, Society for Risk Analysis, May 13, 2020 (via webinar). Presented by H. Christopher Frey, John Bachmann, and Gretchen Goldman.
180. "Trends in Hong Kong Ambient Air Pollutants and Implications for Health Effects," 6th International Symposium on Regional Air Quality Management and the 2nd Guangdong-Hong Kong-Macau Greater Bay Area Air Forum (via webinar), October 21, 2020. Video: http://envf.ust.hk/6raqm_videos/0_FINAL/4_ChrisFrey.mp4
181. "Measurement and Modeling of Exposure to Air Pollution," Korean Society for Atmospheric Environment Annual Conference (via webinar), October 23, 2020.
182. "An Integrated Approach to Measurement and Modeling of Human Exposure to Air Pollution," Invited Keynote Speech, 2020 7th International Conference on Environmental Systems Research (ICESR 2020), December 4, 2020 (via webinar, based in Sydney, Australia).
183. "Observations Regarding Air Quality Science and Policy," Department of Preventive Medicine, University of Southern California, December 4, 2020 (virtual).
184. "Framework for Measurement and Modeling of Multi-pollutant Exposure," 45th Annual Air & Waste Management Association Information Exchange, Virtual Conference, December 9, 2020, invited presentation.

CONFERENCE PRESENTATIONS (SINCE 2015. 286 PREVIOUSLY).

287. "A Simplified Method for Comparing Emissions at Roundabouts and Signalized Intersections," 94th Annual Meeting of the Transportation Research Board, Washington, DC, January 11-15, 2015 (with Salamati, K., N.M. Roupail, B. Liu, and B.J. Schroeder).
288. "Empirical Comparison of Fuel Consumption and Tailpipe Emissions for Light Duty Vehicles Fueled with E85 and Conventional Gasoline," 94th Annual Meeting of the Transportation Research Board, Washington, DC, January 11-15, 2015 (with Delavarrafiee, M., X. Zheng, and R. Weaver,).
289. "Assesing Emissions Impacts of Transportation Management Strategies for Large Scale Regional Networks," 94th Annual Meeting of the Transportation Research Board, Washington, DC, January 11-15, 2015 (with Tanvir, S., B. Liu, X. Zhou, and N.M. Roupail).
290. "Quantification and Application of Real-World Light Duty Vehicle Performance Envelope for Speed and Acceleration," 94th Annual Meeting of the Transportation Research Board, Washington, DC, January 11-15, 2015 (with B. Liu).
291. "Coupling of Traffic Simulation and Emissions Models to Evaluate Interactions Between Vehicles, Infrastructure, and Traffic Management," 25th Coordinating Research Council (CRC) On Road Vehicle Emissions Workshop, Long Beach, CA, March 23-25, 2015 (with N.M. Roupail, X. Zhou, B. Liu).
292. "Real-World Measurements of Passenger Locomotive Exhaust Emissions for Operation on Diesel and Biodiesel," 25th Coordinating Research Council (CRC) On Road Vehicle Emissions Workshop, Long Beach, CA, March 23-25, 2015 (with B.M. Graver and J. Hu).
293. "In-Use Activity, Fuel Use, and Emissions of Diesel and Compressed Natural Gas Refuse Trucks," 25th Coordinating Research Council (CRC) On Road Vehicle Emissions Workshop, Long Beach, CA, March 23-25, 2015 (with G. Sandhu, S. Bartelt-Hunt, and E. Jones).

294. "Preliminary Assessment of Real-World Versus Rated Fuel Economy Based on In-Use Measurements with Portable Emissions Measurement Systems," Portable Emissions Measurement System International Workshop, University of California at Riverside, Riverside, CA, March 26-27, 2015 (with T. Khan).
295. "Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Emissions, Transformation and Transport," 2015 Annual Meeting, Health Effects Institute, Philadelphia, May 3-5, 2015 (H.C. Frey, M. Fuentes, A. Grieshop, N. Rouphail, J. Bang, A. Khlystov, D. Rodriguez).
296. "Assessment of Children's Exposure to Ambient O₃ and PM_{2.5} in Hong Kong," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with Che, W.W., and A.K.H. Lau).
297. "Comparison of Hybrid Electric Vehicle and Conventional Gasoline Vehicle Energy Use and Emissions Based on Real-World Measurements," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with M. Delarrafiee).
298. "Lessons Learned from Field Measurements of Onroad and Nonroad Vehicles Using Portable Emissions Measurement Systems," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015.
299. "Evaluation of the Effect of Biofuels on Exhaust Emissions of Diesel Locomotives," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with B.M. Graver, J. Hu).
300. "Effect of Engineer Behavior on Passenger Locomotive Fuel Use and Emissions," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with B.M. Graver).
301. "Comparison of Nitrogen Oxides and Hydrocarbon Exhaust Concentration Detection Methods for Portable Emission Measurement Systems Applied to Locomotive Engines," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with Hu, J., B.M. Graver,).
302. "Comparison of Real-World Emissions and Fuel Economy to the Certification Test Emission Rates and Rated Fuel Economy for Light Duty Gasoline Vehicles," Paper No. 192, Proceedings, Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with T. Khan).
303. "Energy Use and Emissions Rates for A Plug-In Hybrid Electric Vehicle Based on Real-World Measurements," Paper No. 295, Proceedings, Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with X. Zheng).
304. "Comparison of Real-World and MOVES Estimated Emissions for Heavy-Duty Diesel Refuse Trucks," Annual Meeting of the Air & Waste Management Association, Raleigh, NC, June 22-25, 2015 (with Sandhu, G.S., S. Bartelt-Hunt, E. Jones).
305. "Empirical Comparison of Fine Particulate Matter Exposure Concentrations in North Carolina State University Campus Buses and a Personal Passenger Car," Annual Meeting of the Society for Risk Analysis, Arlington, VA, December 6-10, 2015 (with Maryam Delavarrafiee).
306. "Comparison of Vehicle-Specific Fuel Use and Emissions Models Based on Externally and Internally Observable Activity Data," Paper 16-6315, Annual Meeting of the Transportation Research Board, Washington, DC, January 10-14, 2016 (with Jiangchuan Hu and Scott Washburn).

307. "Evaluation of Light Duty Gasoline Vehicle Rated Fuel Economy based on in-use Measurements," Spotlight Paper of ADC20 Committee Meeting, Paper 16-6058, Annual Meeting of the Transportation Research Board, Washington, DC, January 10-14, 2016 (with Tanzila Khan).
308. "Comparison of Real-World Fuel Economy and Emission Rates to Rated Fuel Economy and Certification Levels," 26th CRC Real World Emissions Workshop, Newport Beach, CA, March 13-16, 2016 (with Tanzila Khan).
309. "Real-World Evaluation of Hybrid Electric Vehicles Fuel Use and Gaseous Emission Rates," 26th CRC Real World Emissions Workshop, Newport Beach, CA, March 13-16, 2016 (with Maryam Delavarrafiee).
310. "Measurement and Modeling of Cold Start Fuel Use and Emissions From Light Duty Gasoline Vehicles," 26th CRC Real World Emissions Workshop, Newport Beach, CA, March 13-16, 2016 (with Jiangchuan Hu).
311. "Empirical Evaluation of Fuel Use and Emission Rates for Light Duty Vehicles Fueled with E85 Ethanol," 26th CRC Real World Emissions Workshop, Newport Beach, CA, March 13-16, 2016 (with Maryam Delavarrafiee).
312. "Sensitivity of Light Duty Gasoline Vehicle Emissions-Based Scoring to Real-World Emissions Versus Emission Standards," 6th Portable Emissions Measurement Systems International Conference & Workshop, University of California at Riverside, Riverside, CA, March 18-19, 2016 (with Nikhil Rastogi).
313. "Factors Related to Emissions Reduction in Diesel Vehicles," NC BREATHE Conference, Charlotte, NC, April 8, 2016.
314. "Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Transformation and Transport," Health Effects Institute Annual Conference, May 1-3, 2016, Denver, CO (with A. Grieshop, N.M. Rouphail, A. Khlystov, D. Rodriguez, M. Fuentes, J. Bang).
315. "A Method for Comparison of Gaseous Emission Rates for Flex Fuel Vehicle Operated on E85 versus Gasoline Based on In-Use Measurements, Certification Data, and Model Predictions," Paper 954, Proceedings, Annual Meeting of the Air & Waste Management Association, New Orleans, LA, June 20-23, 2016 (with Maryam Delavarrafiee).
316. "Geospatial Variation of Real-World Emissions from a Passenger Car," Paper 950, Proceedings, Annual Meeting of the Air & Waste Management Association, New Orleans, LA, June 20-23, 2016 (with Tanzila Khan).
317. "Quantifying the Emission Impacts of Passenger Cars Using Real World In-Use Emission Rates," Paper 1095, Proceedings, Annual Meeting of the Air & Waste Management Association, New Orleans, LA, June 20-23, 2016 (with Nikhil Rastogi).
318. "Comparison of Fuel Economy and Emissions of Light Duty Gasoline Vehicles with Gas Direct Injection Versus Port Fuel Injection Engines," Paper 953, Proceedings, Annual Meeting of the Air & Waste Management Association, New Orleans, LA, June 20-23, 2016 (with Sanjam Singh).
319. "Development and Validation of a Collocated Exposure Monitoring Methodology using Portable Air Monitors," Fall Meeting, American Geophysical Union, San Francisco, CA, December 12-16, 2016 (with Zhiyuan Li, Wenwei Che, and Alexis K.H. Lau).

320. "Real-World Freeway and Ramp Activity and Emissions for Light Duty Gasoline Vehicles," Paper 17-04473, Spotlight Presentation, ADC20 Transportation and Air Quality Committee, Annual Meeting of the Transportation Research Board, Washington, DC, January 11, 2017.
321. "Procedure for Evaluation of Retrofitted SCR-Based Emission Control System for a Passenger Railroad Locomotive," 27th CRC Real World Emissions Workshop, Long Beach, CA, March 26-29, 2017 (with Nikhil Rastogi)
322. "International Comparison Of Real-World Light Duty Vehicle Emissions: Case Study For Raleigh And Lisbon," 27th CRC Real World Emissions Workshop, Long Beach, CA, March 26-29, 2017 (with Maryam Delavarrafiee)
323. "Real-World Versus Modeled Fuel Use And Emission Rates," 27th CRC Real World Emissions Workshop, Long Beach, CA, March 26-29, 2017 (with Tanzila Khan)
324. "Modeling Fuel Use And Emissions For Diesel-Electric Locomotives," 27th CRC Real World Emissions Workshop, Long Beach, CA, March 26-29, 2017 (with Nikhil Rastogi)
325. "Comparison Of Fuel Economy And Gaseous Emissions Of Gas-Direct Injection Versus Port-Fuel Injection Light Duty Vehicles Based On Real-World Measurements," 27th CRC Real World Emissions Workshop, Long Beach, CA, March 26-29, 2017 (with Sanjam Singh)
326. "Transit Train Activity Data for Use in Energy Consumption Estimation," 2017 NC BREATHE Conference, Raleigh, NC, March 28, 2017 (with Weichang Yuan)
327. "Modeling CNG, Diesel, and Hybrid Transit Bus Energy Use Rates," 2017 NC BREATHE Conference, Raleigh, NC, March 28, 2017 (with Tongchuan Wei)
328. "Real-world Versus Certification Emission Rates for Light Duty Gasoline Vehicles," Portable Emissions Measurement Systems International Conference & Workshops, Center for Environmental Research and Technology, University of California at Riverside, Riverside, CA, March 30-31, 2017 (with Tanzila Khan).
329. "Estimating Emission Rates For Retrofitted SCR-Based Emission Control System Using PEMS Based Measurements," Portable Emissions Measurement Systems International Conference & Workshops, Center for Environmental Research and Technology, University of California at Riverside, Riverside, CA, March 30-31, 2017 (with Nikhil Rastogi).
330. Frey, H.C., A. Grieshop, N. Rouphail, J. Guinness, H. Brantley, J. Bang, D. Rodriguez, M. Fuentes, A. Khlystov, "Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Transformation and Transport," Annual Conference of the Health Effects Institute, Alexandria, VA, April 30 – May 2, 2017.
331. "Key Factors Affecting Inter-County Variability in MOVES County-Level Energy Inventory," Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Tanzila Khan).
332. "Comparative Assessment of Variability in Light Duty Vehicle Exhaust Emission Rates Based on Vehicle Types, Age, Driving Cycles, and Ambient Conditions," Paper 257303, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Bin Liu).

333. "Comparison of Real World Light-Duty Gasoline Vehicle Emissions for High Altitude Mountainous Versus Low Altitude Piedmont Study Areas," Paper 258455, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with JC Hu).
334. "Evaluation of the Effect of Biodiesel on Exhaust Emissions of Locomotive Head End Power Engines," Paper 258453, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with JC Hu).
335. "Procedure for Evaluation of Retrofitted SCR-Based Emission Control System for a Passenger Railroad Locomotive," Paper 261700, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Nikhil Rastogi).
336. "Development of Simplified Models of CNG, Diesel, and Hybrid Transit Bus Energy Use," Paper 261821, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Tongchuan Wei and Tanzila Khan).
337. "Quantification of Transit Train Activity Data for Energy Consumption Estimation," Paper 264161, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Weichang Yuan).
338. "Procedure for Measuring and Comparing Fuel Use and Gaseous Emissions for Gas-Direct Injection versus Port Fuel Injection Vehicles," Paper 263949, Annual Conference and Exhibition of the Air & Waste Management Association, Pittsburgh, PA, June 5-8, 2017 (with Sanjam Singh).
339. "Measuring Human Exposure to Traffic-Related Air Pollution: Case Study for Raleigh (USA)," 2017 Annual Meeting of Society for Risk Analysis Europe, Lisbon, Portugal, June 20, 2017 (with S. Singh).
340. "Measurement of Transportation Air Pollutant Exposure Concentrations," 27th Annual Meeting, International Society for Exposure Science, Research Triangle Park, NC, October 18, 2017 (with S. Singh and D. Gadre).
341. "Exposure to Air Pollutants in Selected High-rise Buildings in High Density Urban Areas in Hong Kong," 27th Annual Meeting, International Society for Exposure Science, Research Triangle Park, NC, October 18, 2017 (with T. Li, W. Che, A.K.H. Lau)
342. "Characterizing Air Pollution Exposures in Complex Urban Environments: Experiences and Lessons Learned in Hong Kong," 27th Annual Meeting, International Society for Exposure Science, Research Triangle Park, NC, October 18, 2017 (with W. Che, A.K.H. Lau, and Z. Li).
343. "Factors Affecting Variability in PM_{2.5} Exposure Concentrations in a Metro System," 5th International Symposium on Regional Air Quality Management in Rapidly Developing Regions, Guangzhou, China, November 16-19, 2017 (with Zhiyuan Li, Wenwei Che, and Alexis Lau).
344. "Denying Denialism: Uncovering the Methods and Institutions of Climate Change Denial," Society for Risk Analysis Annual Meeting, Crystal City, VA, December 11-13, 2017.
345. "Commuter Exposure to Air Pollutants During Transportation in Hong Kong," Society for Risk Analysis Annual Meeting, Crystal City, VA, December 11-13, 2017 (with A.K.H. Lau, W. Che, and Z. Li).
346. "Effect of Light Duty Vehicle Performance on a Driving Style Metric," TRB Paper No. 18-02023, Presented at the 97th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2018 (with Shams Tanvir and Nagui Rouphail).

347. "Evaluation of the Effect of Passenger Load on Transit Bus Energy Use," TRB Paper No. 18-04323, Presented at the 97th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2018 (with Tongchuan Wei).
348. "Evaluation of General Transit Feed Specification Data for Route Characteristics and Travel Activity Data of an Electric Train System," TRB Paper No. 18-05638, Presented at the 97th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2018 (with Weichang Yuan).
349. "Estimation of Rail Grade and Horizontal Curvature from Non-Proprietary Data Sources," TRB Paper Number 18-06366, Presented at the 97th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2018 (with Nikhil Rastogi).
350. "How Much Data and How Many Vehicles are Enough for a Field Study?," 28th CRC Real World Emissions Workshop, Garden Grove, CA, March 18-21, 2018.
351. "Modeling Real-World Fuel Use and Emissions for Diesel-Electric Locomotives," 28th CRC Real World Emissions Workshop, Garden Grove, CA, March 18-21, 2018 (with Nikhil Rastogi).
352. "Evaluation of Air-Conditioning Effects on Light Duty Gasoline Vehicles Fuel Economy," 28th CRC Real World Emissions Workshop, Garden Grove, CA, March 18-21, 2018 (with Tanzila Khan).
353. "Evaluation of Speed-Density Method Based Estimates of Light Duty Vehicle Fuel Use and Emission Rates," 28th CRC Real World Emissions Workshop, Garden Grove, CA, March 18-21, 2018 (with Tongchuan Wei).
354. "Modeling a Diesel-Electric Train Energy Consumption Index Using Simulated Speed Trajectories," 28th CRC Real World Emissions Workshop, Garden Grove, CA, March 18-21, 2018 (with Weichang Yuan).
355. "Comparison of Real-World Vehicle Emissions for Gasoline-Ethanol Fuel Blends," Portable Emissions Measurement Systems International Conference & Workshop, University of California at Riverside, March 22-23, 2018 (with Tongchuan Wei, Weichang Yuan, Nikhil Rastogi, David Miller, Larry Matheson, Steven VanderGriend).
356. "Procedure for Estimating Energy Use and Emissions from a Diesel Passenger Train," Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018. N. Rastogi and H.C. Frey.
357. "Development of Updated MOVES Lite: A Simplified Version of MOVES," Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018. Khan, T., and H.C. Frey.
358. "Development and Validation of Transit Bus Energy Use Rate Models," Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018. Wei, T., and H.C. Frey.
359. "An Algorithm to Simulate Segment Speed Trajectories of a Metrorail Line," Annual Conference and Exhibition of the Air & Waste Management Association, Hartford, CT, June 25-28, 2018. Yuan, W., and H.C. Frey.
360. "Verifying Real-World Emission Impacts of Sustainable Transport Technologies," Sustainable Fleet Technology Conference and Expo, Durham Convention Center, Durham, NC, August 22-23, 2018. H.C. Frey

361. "Comparison of Methods Based on Portable Emission Measurement systems for Evaluation of A Diesel Locomotive Retrofitted NO_x Emission Control System ," 98th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2019. Rastogi, N., and H.C. Frey.
362. "Effect of Air-Conditioning on Light Duty Gasoline Vehicles Fuel Economy," 98th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2019, Khan, T., and H.C. Frey.
363. "Quantification of Energy Saving Potential for a Passenger Train based on Inter-run Variability in Speed Trajectories," 98th Annual Meeting of the Transportation Research Board, Washington, DC, January 7-11, 2019, Yuan, W., N. Rastogi, and H.C. Frey.
364. "Spatial Variation of Real-World Microscale Vehicle Activity and Emissions," 29th CRC Real World Emissions Workshop, Long Beach, CA, March 12, 2019. H.C. Frey.
365. "Development of Running Exhaust Emission Rate Models for Transit Buses," 29th CRC Real World Emissions Workshop, Long Beach, CA, March 12, 2019. T. Wei and H.C. Frey.
366. "Quantifying Emission Hotspots Along a Diesel-Powered Train Route," 29th CRC Real World Emissions Workshop, Long Beach, CA, March 12, 2019. N. Rastogi and H.C. Frey.
367. "Variability in Vehicle Energy Use and Emissions Based on Cycle Average Speed and Vehicle Specific Power," 9th Annual International Portable Emissions Measurement Systems Conference, University of California, Riverside, CA, March 15, 2019. H.C. Frey.
368. "Trends in Light Duty Gasoline Vehicle Emissions Based on Real-World Measurements," 23rd International Transport and Air Pollution Conference 15-17 May 2019, Thessaloniki, Greece. Frey, H.C., T.Wei, T. Khan, W.Yuan, N. Rastogi.
369. "Microscale Vehicle emission modelling in Hong Kong," 23rd International Transport and Air Pollution Conference 15-17 May 2019, Thessaloniki, Greece, Wong, C.K.L. , T.S. Lo, H.L.A. Wong, K.L. Lam, H. C. Frey, R. Smit, S. Hausberger, K. Weller and L. Ntziachristos.
370. "Real-World Measurement of Emissions of In-Use Trucks, Locomotives, and Non-road Equipment," Freight and Energy: Ports of Entry, Specialty Conference, Air & Waste Management Association, Newark, NJ, October 23, 2019. H.C. Frey
371. "Measurement and Modeling of Urban Personal Air Pollution Exposure in Hong Kong," Annual Meeting, Society for Risk Analysis, Alexandria, VA, December 6, 2019. A. Lau, W. Che, H.C. Frey, M.S. Hossain.
372. "Procedural and Compositional Changes to the EPA Clean Air Scientific Advisory Committee Undermine the Credibility of Scientific Review of U.S. National Ambient Air Quality Standards," American Geophysical Union Fall Meeting, San Francisco, December 11, 2019.
373. "Evaluation of the Precision and Accuracy of Cycle Average Light Duty Gasoline Vehicles Tailpipe Emission Rates Predicted by Modal Models," 99th Annual Meeting of the Transportation Research Record, Washington, DC, January 15, 2020, T. Wei and H.C. Frey.
374. "Quantification of Sources of Variability of Air Pollutant Exposure Concentrations Among Selected Transportation Microenvironments," 99th Annual Meeting of the Transportation Research Record, Washington, DC, January 13, 2020, H.C. Frey, D. Gadre, S. Singh, and P. Kumar.

SPONSORED GRANTS AND CONTRACTS

Career total of 76 sponsored projects since 1992 with total value of over \$12 million.

External Funding				
Development and Application of Optimal Design Capability for Coal Gasification Systems	Frey, Henry C.	Carnegie Mellon University	\$64,138	01/01/1994 through 12/31/1995
Quantitative Analysis of Variability and Uncertainty in Acid Rain Assessments	Frey, Henry C.	US Dept. of Energy (DOE)	\$84,642	06/01/1995 through 05/31/1997
New Methods for Systems Analysis of Environmental Technologies	Frey, Henry C.	National Science Foundation (NSF)	\$235,000	06/01/1997 through 05/31/2003
Development and Application of Optimal Design Capability For Coal Gasification Systems	Frey, Henry C.	Carnegie Mellon University (Prime - US Dept. of Energy (DOE))	\$205,000	01/01/1997 through 04/30/2007
Air Quality Modeling Uncertainty Analysis	Frey, Henry C.	Hanna Consultants	\$20,000	08/15/1997 through 10/30/1999
ITS Integration of Real-Time Emissions Data and Traffic Management System Intelligent Information Systems	Rouphail, Nagui M. Frey, Henry C. Ranjithan, Sanmugavadivel	National Institute of Statistical Sciences	\$38,000	08/16/1997 through 03/31/1999
Development & Application of a Methodology for Characterizing & Managing Uncertainties in Emission Inventories	Frey, Henry C. Loughlin, Daniel H.	US Environmental Protection Agency (EPA)	\$553,298	01/11/1999 through 01/10/2003
Probabilistic Modeling of Variability and Uncertainty in Urban Air Toxic Emissions	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$329,425	10/01/1998 through 03/31/2004
New Methods for Assessment of Pollution Prevention Technologies	Frey, Henry C. Barlaz, Morton A.	US Environmental Protection Agency (EPA)	\$180,000	10/01/1998 through 09/30/2003
Analysis of Uncertainty and Variability in Emission Estimation	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$41,683	07/07/1998 through 12/31/1998
New Methods for Assessment of Pollution Prevention Technologies	Frey, Henry C. Barlaz, Morton A.	National Science Foundation (NSF)	\$180,000	10/01/1998 through 09/30/2003
Analysis of Uncertainty & Variability in Emissions Estimation	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$42,647	08/14/1999 through 12/15/1999
Services for Risk Assessment Development	Frey, Henry C.	US Dept. of Agriculture	\$15,000	10/01/1999 through 09/30/2000

		(USDA)		
Identification & Application of Methods for Sensitivity Analysis of Complex Food Safety Process Risk Models	Frey, Henry C. Cowen, Peter Jaykus, Lee-Ann	US Dept. of Agriculture (USDA)	\$294,325	09/30/2000 through 01/31/2004
Development of a Module for Statistical Analysis of Variability & Uncertainty	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$45,000	08/09/2001 through 01/31/2002
Recommend Strategy for On-Board Emissions Data Analysis & Collection for New Generation Model	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$29,773	10/22/2001 through 02/15/2002
Recoding and Uncertainty Analysis of the SHEDS/Pesticides Model	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$96,403	04/09/2002 through 07/18/2003
Methodology for Developing Modal Emission Rates for EPA's Multi-Scale Motor Vehicle and Equipment Emission System(MOVES)	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$51,459	05/15/2002 through 08/31/2002
In-Vehicle Energy and Emissions Information System	Frey, Henry C. Rouphail, Nagui M.	National Science Foundation (NSF)	\$336,928	01/01/2003 through 12/31/2008
Uncertainty Analysis for the 1996 National Scale Air Toxics Assessment	Frey, Henry C.	MCNC-RDI	\$18,850	12/16/2002 through 03/31/2004
Life Cycle Inventory and Impact Analysis Framework for Nonroad Construction Vehicles and Equipment Based Upon In-use	Frey, Henry C. Rasdorf, William J.	National Science Foundation (NSF)	\$375,000	09/15/2003 through 08/31/2008
Operational Evaluation of Emissions and Fuel Use of B20 Versus Diesel Vehicles	Frey, Henry C. Rouphail, Nagui M.	NC Department of Transportation	\$84,050	10/01/2003 through 12/31/2004
Review and Recommendation of Methods for Sensitivity and Uncertainty Analysis for the SHEDS Models	Frey, Henry C.	Alion Science and Technology (Prime - US Environmental Protection Agency (EPA))	\$88,802	03/15/2004 through 06/30/2005
NARSTO Emission Inventory Assessment	Frey, Henry C.	California Air Resources Board	\$42,000	02/28/2004 through 06/15/2004
NARSTO Emission Inventory Assessment	Frey, Henry C.	National Oceanic & Atmospheric Administration (NOAA)	\$58,326	06/16/2004 through 06/30/2005
Measurement and Analysis of Diesel-Fueled Passenger Vehicle Emissions	Frey, Henry C.	Imperial College Consultants	\$8,900	02/01/2005 through 05/31/2005

Real World Duty Cycles and Utilization for Construction Equipment in North Carolina	Frey, Henry C. Rasdorf, William J.	NC Department of Transportation	\$164,730	07/01/2005 through 06/30/2007
Measurement and Analysis of Gasoline-Fueled Passenger Vehicle Emissions on Dirt Versus Paved Roads and During Idling	Frey, Henry C.	Clean Air Technologies International, Inc. (Prime - Texas Transportation Institute)	\$11,500	06/01/2005 through 07/29/2005
Master Agreement - Scientific, Technical, Research, Engineering, and Modeling Support (STREAMS)	Barlaz, Morton A. Frey, Henry C. Borden, Robert C. Ducoste, Joel J. De Los Reyes III, Francis Lajara Knappe, Detlef R.	RTI International (aka Research Triangle Institute) (Prime - US Environmental Protection Agency (EPA))	\$0	09/27/2005 through 09/26/2010
IPA for Chris Frey - Exposure Modeling Advice at U.S. Environmental Protection Agency Human Exposure Research Laboratory	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$61,068	08/16/2006 through 05/15/2007
A Spatial-Temporal Modeling Approach For Environmental Epidemiological Data	Fuentes, Montserrat Ghosh, Sujit K. Frey, Henry C. Shea, Damian	National Institutes of Health (NIH)	\$948,055	12/15/2007 through 08/25/2011
IPA for Chris Frey-Exposure Modeling Advice at U.S. Environmental Protection Agency Human Exposure Research Laboratory	Frey, Henry C.	US Environmental Protection Agency (EPA)	\$14,412	05/16/2007 through 08/15/2007
Training and Instruction Regarding the Integrated Environmental Control Model (IECM)	Frey, Henry C.	Virginia Department of Environmental Quality	\$4,924	06/01/2007 through 08/15/2007
Comparison of Biodiesel Versus Petroleum Diesel Based On In-Use Measurement of Emissions for Heavy Duty Vehicles: Vancouver Case Study	Frey, Henry C.	Lafarge North America	\$39,725	08/16/2007 through 12/15/2007
Comparison of Biodiesel Versus Petroleum Diesel Based On In-Use Measurement of Emissions for Heavy Duty Vehicles: Atlanta Case Study	Frey, Henry C.	Lafarge North America	\$34,973	08/16/2007 through 12/15/2007
Spatial-temporal Modeling and Analysis of Health Effects Associated with Source Contributions and Speciation of Fine Particulate Matter	Fuentes, Montserrat Frey, Henry C. Zhang, Yang	US Environmental Protection Agency (EPA)	\$902,349	05/15/2008 through 11/30/2013

Development and Evaluation of Methodological Framework for Real-World Vehicle Energy Use and Emissions Estimation at Multiple Temporal and Vehicular Scales	Frey, Henry C. Roupail, Nagui M.	National Science Foundation (NSF)	\$326,627	05/15/2008 through 09/30/2014
Portable Emission Measurement of Diesel and Diesel Blend Fueled Utility Trucks	Frey, Henry C.	Blossman Propane Gas and Appliance	\$3,200	02/10/2008 through 03/31/2008
Measurement and Modeling of On-Board Tire/Pavement Noise in North Carolina	Frey, Henry C. Kim, Youngsoo R.	NC Department of Transportation	\$0	through
Multiple Tiered Methodology For Micro- to Macro-Scale Assessment of Plug-In Hybrid Electric Vehicles (M4-PHEVs)	Frey, Henry C. DeCarolis, Joseph F	National Science Foundation (NSF)	\$470,036	10/01/2009 through 09/30/2015
Measurement and Evaluation of Fuels and Technologies for Passenger Rail Service in North Carolina	Frey, Henry C. Hobbs, Alexander O.	NC Department of Transportation	\$158,658	08/16/2009 through 08/15/2011
Comparison of Heavy Duty Diesel Vehicle Energy Use and Emissions For a Nanotechnology Fuel Additive	Frey, Henry C.	Nanostar Advanced Technologies	\$14,999	05/16/2009 through 08/15/2009
Framework for Mobile Source Emission Inventories	Frey, Henry C. Roupail, Nagui M.	US Environmental Protection Agency (EPA)	\$500,000	05/16/2010 through 09/30/2014
Measurement and Evaluation of Alternative Fuels and Technologies for a Passenger Rail Diesel Locomotive Prime Mover Engine	Frey, Henry C.	American Motive Power, Inc.	\$20,000	05/22/2009 through 08/15/2009
Dynamometer Testing of Railroad Locomotive Engines 2010-33	Frey, Henry C.	NC Department of Transportation	\$74,999	01/20/2010 through 03/31/2012
Comparison of Earthmoving Vehicle Energy Use and Emissions	Frey, Henry C.	Greener by Design, LLC	\$31,435	04/17/2012 through 09/30/2012
Locomotive Biofuel Study	Frey, Henry C. Hobbs, Alexander O.	US Dept. of Transportation (DOT)	\$386,201	01/03/2011 through 09/30/2014
Comparison of Heavy Duty Diesel Vehicle Energy Use and Emissions for a Fuel Additive	Frey, Henry C.	Hydrotex Partners, Inc.	\$11,500	01/01/2011 through 09/30/2011
Evaluation of Energy Use	Frey, Henry C.	NC Department	\$49,565	10/16/2011 through

and Emissions of Rebuilt Passenger Railroad Locomotives		of Transportation		10/15/2012
Evaluating Air Emissions and Fuel Efficiency of Solid Waste Collection Vehicles	Frey, Henry C.	University of Nebraska - Lincoln (Prime - Environmental Research & Education Foundation)	\$89,900	03/01/2012 through 01/31/2015
Measurement of Emissions of Over-Snow Vehicles at Yellowstone National Park	Frey, Henry C.	Louis Berger Group, Inc. (Prime - US Dept. of Interior (DOI))	\$27,500	03/02/2011 through 09/30/2012
STRIDE - University of Florida Consortium	Brill, Earl D. Rouphail, Nagui M. Frey, Henry C. Schroeder, Bastian Huegy, Joseph Martin, James B. Findley, Daniel Cook, Thomas J. O'Brien, Sarah Dudley II, Thomas Edward Palmer, William Mathew Cunningham, Christopher Michael Warchol, Shannon Elizabeth Lane, Leigh B. Tsai, Jeffrey C.	University of Florida (Prime - US Dept. of Transportation (DOT))	\$797,296	01/01/2012 through 06/30/2017
Quantification of Earthmoving Vehicle Energy Use and Emissions	Frey, Henry C.	Alternative Fuels Group, Inc.	\$5,600	07/15/2012 through 09/30/2012
Comparison of Vehicle Energy Use and Emissions From Electronic Control Unit Reflash	Frey, Henry C.	SCT Performance LLC	\$20,000	08/16/2012 through 12/31/2012
Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Emissions, Transformation and Transport	Frey, Henry C. Grieshop, Andrew Fuentes, Montserrat Rouphail, Nagui M.	Health Effects Institute (Prime - US Environmental Protection Agency (EPA))	\$383,006	07/01/2014 through 06/30/2017
Measurement of Locomotive Head End Power Engine Fuel and Emissions	Frey, Henry C.	NC Department of Transportation	\$89,967	08/16/2014 through 08/15/2015

Evaluation of Locomotive Emissions Reduction Strategies	Frey, Henry C. Fang, Tiegang	NC Department of Transportation	\$199,644	08/16/2015 through 12/31/2017
Traveler Response Architecture using Novel Signaling for Network Efficiency in Transportation (TRANSNET)	Rouphail, Nagui M. Frey, Henry C.	University of Maryland, College Park (Prime - US Dept. of Energy (DOE))	\$649,977	10/01/2015 through 08/30/2018
Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Emissions, Transformation and Transport	Frey, Henry C. Grieshop, Andrew Rouphail, Nagui M. Guinness, Joseph S Fuentes, Montserrat	Health Effects Institute (Prime - US Environmental Protection Agency (EPA))	\$461,291	08/15/2015 through 12/30/2016
Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-Use, Traffic, Emissions, Transformation and Transport	Frey, Henry C. Grieshop, Andrew Rouphail, Nagui M. Guinness, Joseph S	Health Effects Institute (Prime - US Environmental Protection Agency (EPA))	\$65,864	01/01/2017 through 05/31/2019
Managing Energy and Emissions for Rail Operations	Frey, Henry C.	NC Department of Transportation	\$219,996	08/01/2017 through 08/15/2019
Evaluation of Real-World Emissions Impacts of Octane and Splash-Blended E25 for Light Duty Gasoline Vehicles	Frey, Henry C.	Urban Air Initiative	\$93,295	08/15/2017 through 02/28/2018
Real-World Light Duty Gasoline Vehicle Emissions Measured Using Portable Emission Measurement Systems	Frey, Henry C.	Eastern Research Group, Inc. (Prime - US Environmental Protection Agency (EPA))	\$14,999	01/01/2018 through 02/28/2018
Development of Real-World Light Duty Gasoline Vehicle Emissions Data	Frey, Henry C.	Eastern Research Group, Inc. (Prime - US Environmental Protection Agency (EPA))	\$19,998	03/01/2018 through 05/15/2018
Impacts of Autonomous Vehicle Technology on Transportation Systems	Bardaka, Eleni List, George F. Rouphail, Nagui M. Williams, Billy M. Frey, Henry C.	NC Department of Transportation	\$338,515	08/01/2018 through 07/31/2020
Efficacy and Durability of Advanced Retrofitted Emissions Controls for Passenger Service Diesel Locomotives	Frey, Henry C.	NC Department of Transportation	\$278,294	08/01/2019 through 07/31/2021

Personal and Population Air Pollution Exposure Assessment Simulation for the Personalised Real-Time Air Quality Informatics System for Exposure – Hong Kong (PRAISE-HK)	Frey, Henry C.	Hong Kong University of Science and Technology (Prime - HSBC 150th Anniversary Charity Programme)	\$302,817	01/01/2020 through 10/31/2021
Total external funding: \$11,805,564				

Internal Funding				
Remote Sensing of Mobile Source Air Pollutant Emissions	Frey, Henry C.	NCSU Institute for Transportation Research & Education	\$62,295	07/01/1995 through 12/31/1996
Probabilistic Evaluation of Technological, Environmental, and Economic Factors in Mobile Source Air Pollution	Frey, Henry C. Ranjithan, Sanmugavadivel Brill, Earl D.	NCSU Center for Transportation & the Environment	\$150,000	08/01/1994 through 09/30/1996
Intelligent Transportation Systems Integration of Real-Time Emissions Data and Traffic Management systems	Rouphail, Nagui M. Frey, Henry C. Ranjithan, Sanmugavadivel	NCSU Center for Transportation & the Environment	\$24,866	01/01/1997 through 12/31/1997
ITS Integration of Real-Time Emissions and Traffic Management	Rouphail, Nagui M. Frey, Henry C.	NCSU Center for Transportation & the Environment	\$23,776	07/15/1998 through 12/31/1998
Emission Reduction Through Better Traffic Management	Frey, Henry C. Rouphail, Nagui M.	NCSU Institute for Transportation Research & Education	\$159,557	04/01/1999 through 06/30/2001
Best Practices Guidebook for Greenhouse Gas Reductions in Freight Transportation	Williams, Billy M. Frey, Henry C.	NCSU Institute for Transportation Research & Education	\$75,000	03/04/2005 through 03/31/2007
Microbial Risk Assessment of Graywater Reuse using Quantitative Molecular Approaches	De Los Reyes III, Francis Lajara Frey, Henry C.	NCSU Water Resources Research Institute	\$50,000	03/01/2011 through 12/31/2012
Comparison of Air Pollution in Transportation ENvironments (CAPTEN): Development and Demonstration Based on Selected UK and US Cities	Frey, Henry C.	University Global Partnership Network (UGPN)	\$10,000	08/01/2014 through 07/31/2015
Pollutant Exposure in Microenvironments: Examining Air Pollution at a Division I College Football Stadium	Bunds, Kyle S Casper, Jonathan M Frey, Henry C.	NCSU Faculty Research & Professional Development Fund	\$4,500	07/01/2015 through 06/30/2016

Development and Demonstration of Methods for Measurement of Human Exposure to Air Pollution Using Portable Sensors Applied to High Potential Dose Scenarios in Urban Environments	Frey, Henry C. Bunds, Kyle S Casper, Jonathan M Grieshop, Andrew	NCSU Center for Human Health and the Environment	\$34,972	08/16/2015 through 12/31/2016
Total internal funding: \$594,966				

MASTERS THESES AND DOCTORAL DISSERTATIONS DIRECTED [27 MS, 23 PhD]

1. Pankaj Agarwal, MS, "Modeling and Assessment of the Externally-Fired Combined Cycle System," graduated December 1995 (chair).
2. Mitesh Kini, MS, "Probabilistic Modeling of Exhaust Emissions from Light Duty Gasoline Vehicles," graduated December 1996 (chair).
3. Loan K. Tran, MS, "Performance and Cost Modeling of NO_x Combustion Control Technologies in Pulverized Coal Power Plants," graduated December 1996 (chair).
4. Kamalpreet Singh, MS, "Uncertainty Analysis in Air Quality Modeling," graduated December 1997 (chair).
5. David Rhodes, MS, "Quantitative Analysis of Variability and Uncertainty in Environmental Risk Assessment," graduation August 1997 (chair).
6. Ranjit Bhavirkar, MS, "Quantitative Analysis of Variability and Uncertainty in Emission Factors and Emission Inventories," May 1999 (chair).
7. Alper Unal, MS, "Modeling of Highway Vehicle Emissions Using Remote Sensing Data," May 1999 (chair).
8. Naveen Akunuri, MS, "Process Modeling of Integrated Gasification Combined Cycle Systems Using ASPEN," May 1999 (chair).
9. Russell Dalton, MS, 1999 (co-chair with Nagui M. Roupail)
10. Sudeep Vaswani, MS, "Development of Models for Calculating the Life Cycle Inventory of Methanol by Liquid Phase and Conventional Production Processes," June 2000 (co-chair with M.A. Barlaz).
11. Matthew Pickett, MS, "Modeling the Performance and Emissions of British Gas/Lurgi-Based Integrated Gasification Combined Cycle Systems," January 2001 (co-chair with M.A. Barlaz)
12. Colyar, James Daniel, MS, "An Empirical Study of the Relationships Between Macroscopic Traffic Parameters and Vehicle Emissions," March 2001 (co-chair with Nagui Roupail).
13. Coehlo, Maysa, PhD, "Evaluation of Alternative Future Energy Scenarios for Brazil Using an Energy Mix Model," June 2001 (chair)
14. Bammi, Sachin, MS, "Quantitative Analysis of Variability and Uncertainty in On-Road and Non-Road Mobile Source Emission Factors," July 2001 (chair)
15. Patil, Sumeet R., MS, "Identification, Application, and Comparison of Sensitivity Analysis Methods for Food Safety Risk Assessment Models," August 2001 (chair)
16. Xie, Chi, MS, "Modeling the Performance and Emissions of Integrated Gasification Combined Cycle based Lurgi Ammonia Synthesis System," December 2001 (chair)
17. Zheng, Junyu, PhD Dissertation, "Quantification of Variability and Uncertainty in Emission Estimation: General Methodology and Software Implementation," May 2002 (chair)
18. Li, Minsheng, MS Thesis, "Life Cycle Inventory Development for a Solid Waste/Coal Blend Gasification System for Production of Power and Chemicals," August 2002 (co-chair with M. Barlaz).
19. Unal, Alper, PhD Dissertation, "On-Board Measurement and Analysis of On-Road Vehicle Emissions," August 2002 (chair).

20. Li, Song, PhD Dissertation, "Development and Demonstration of a Methodology for Characterizing and Managing Uncertainty and Variability in Emission Inventories," August 2002 (chair).
21. Abdel-Aziz, Amr, PhD Dissertation, "Incorporating Uncertainties in Emission Inventories Into Air Quality Modeling," December 2002 (chair).
22. Chen, Jianjun, MS Thesis, "Optimization of Gasification Combined Cycle Systems Under Variability and Uncertainty," July 2003 (chair).
23. Zhao, Yuchao, PhD Dissertation, "Quantification of Variability and Uncertainty in Emission Factors and Emission Inventories for Urban Air Toxics," August 2003 (chair).
24. Danish, Tanvir, MS Thesis, "Evaluation of Selected Sensitivity Analysis Methods Based upon Applications to a Probabilistic Food Safety Process Risk Model: Case Study for *Listeria monocytogenes*," Dec 2003 (chair).
25. Mokhtari, Amirhossein, PhD Dissertation, "Evaluation of Sensitivity Analysis Methods for Application to Microbial Food Safety Process Risk Models," July 2004.
26. Zhu, Yunhua, PhD Dissertation, "Evaluation of Gas Turbine and Gasifier-Based Power Generation Systems," August 2004.
27. Phillips, Lori Ann, MS Thesis, "Public Perception of Indoor Air Quality and Evaluation of Indoor Air Cleaners," May 2006.
28. Abolhasani, Saeed, MS Thesis, "Assessment of On-Board Emissions and Energy Use of Nonroad Construction Vehicles," August 2006.
29. Zhang, Kaishan, PhD Dissertation, "Micro-Scale On-Road Vehicle-Specific Emissions Measurements and Modeling," August 2006.
30. Kim, Kangwook, PhD Dissertation, "Operational Evaluation of In-Use Emissions and Fuel Consumption of B20 Biodiesel versus Petroleum Diesel-Fueled Onroad Heavy-Duty Diesel Dump Trucks and Nonroad Construction Vehicles," December 2007.
31. Zhai, Haibo, PhD Dissertation, "Regional Onroad Mobile Source Emissions Characterization for Conventional and Alternative Vehicle Technologies," December 2007.
32. Pang, Shih-hao, PhD Dissertation, "Life Cycle Inventory Incorporating Real-World In-Use Measurement Data for Nonroad Construction Vehicles and Equipment," December 2007.
33. Kuo, Po-Yao, PhD Dissertation, "Evaluation of Freight Truck Anti-Idling Strategies for Reduction of Greenhouse Gas Emissions," August 2008.
34. Choi, Hyung-Wook, PhD Dissertation, "Measurement and modeling of the activity, energy, and emissions of conventional and alternative vehicles," August 2009.
35. Cao, Ye., MS Thesis, "Modeling of Human Exposure to Fine Particulate Matter Using a Stochastic Scenario-Based Model," August 2010.
36. Graver, B., MS Thesis, "Measurement, Prediction, and Evaluation of Microscale Energy Use and Emissions for a Plug-In Hybrid Electric Vehicle Based on Real-World Driving Data," August 2010.
37. Sandhu, G., MS Thesis, "Methods For Quality Assurance Of Portable Emissions Measurement System Data and Methods For Field Comparison Of Alternative Fuels," August 2010.
38. Liu, X., PhD Dissertation, "Quantification and Source Apportionment of Human Exposure to Atmospheric Fine Particulate Matter," December 2011.

39. Sun, Yuanfang, MS Thesis, "Repeatability of Real-World Vehicle Emissions Measurements," May 2012.
40. Yazdani, B., MS Thesis, "Measurement of Road Grade," December 2012.
41. Jiao, Wan, Ph.D. Dissertation, Assessment of Population and Microenvironmental Exposure to Fine Particulate Matter (PM_{2.5}), August 2013.
42. Sandhu, Gurdas Singh, Ph.D. Dissertation, Evaluation of Activity, Fuel Use, and Emissions of Heavy-Duty Diesel and Compressed Natural Gas Vehicles, May 2015.
43. Liu, Bin, Ph.D. Dissertation, Quantification and Evaluation of Onroad Light Duty Vehicle Tailpipe Emissions, May 2015.
44. Zheng, Xiaohui, MS Thesis, Measuring, Evaluating, and Modeling Energy Use and Emission Rates for a Plug-In Hybrid Electric Vehicle Based on Real-World Measurement, December 2015.
45. Graver, Brandon, Ph.D. Dissertation, Measurement and Evaluation of Passenger Locomotive Fuel Use and Emissions Using a Portable Emissions Measurement System, July 2016.
46. Delavarrafiee, Maryam, Ph.D. Dissertation, Empirical Evaluation of In-Use Vehicle Fuel Use and Emissions for Alternative Fuels and Vehicle Technologies, July 2017.
47. Tanvir, Shams, PhD Dissertation, Modeling and Simulation of Driving Activity from an Energy Use- Emissions Perspective, January 2018.
48. Singh, Sanjam, MS Thesis, Comparison of Fuel Economy and Gaseous Emissions of Gas-Direct Injection versus Port-Fuel Injection Light Duty Vehicles Based on Real-World Measurements, April 2018.
49. Li, Zhiyuan, PhD Dissertation, Characterizing Infiltration of Ambient PM_{2.5} into Urban Microenvironments Using Portable Monitors, August 2018. *Co-supervised at Hong Kong University of Science and Technology.*
50. Khan, Tanzila, PhD Dissertation, Mesoscale and Microscale Evaluation of Vehicle Fuel-Use and Emissions, 2020.

Other Advising: 8 postdoctoral research fellows, 4 visiting PhD students (three from Hong Kong University of Science and Technology, one from South China University of Technology), 9 MCE or MENE students with master's projects, 11 undergraduate research assistants.

NATIONAL PUBLIC SERVICE – PEER REVIEW AND ADVISORY PANELS

- (a) Invited Participant, U.S. Environmental Protection Agency workshop on Monte Carlo simulation in exposure assessment, June 1992.
- (b) Peer Reviewer, U.S. Environmental Protection Agency Exploratory Research Grants Program. June 1994.
- (c) Peer Reviewer, U.S. Environmental Protection Agency Graduate Fellowship Program. Spring 1995. Three day review meeting was held in Washington, DC in March.
- (d) Scientific Peer Review Panelist, U.S. Environmental Protection Agency draft report to Congress on Air Toxics Emissions from Fossil-Fuel-Fired Electric Power Plants. Activity occurred from June to August 1995. The peer review panel consisted of ten nationally recognized experts in air toxics, risk assessment, environmental control, and related fields.
- (e) Invited to present at the U.S. Department of Energy's national laboratories' Energy Coordinating Committee subcommittee on research planning. The meeting was held in Dallas, Texas on September 12, 1995. The presentation was on "A Method for Federal Energy Research Planning". The meeting was attended by representatives of Argonne National Laboratory, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Oak Ridge National Laboratory, Pacific Northwest Laboratory, and Sandia National Laboratory.
- (f) Oversaw the creation and testing of World Wide Web site for the Society for Risk Analysis, December 1996 - March 1997.
- (g) Peer Reviewer, U.S. Environmental Protection Agency, Office of Mobile Sources, 1998.
- (h) Peer Reviewer, U.S. Environmental Protection Agency, Risk Assessment Forum, 1998.
- (i) Peer Reviewer, U.S. Environmental Protection Agency, Office of Policy, Planning, and Evaluation, 1998.
- (j) Proposal Review Panel, "Professional Opportunities for Women in Research and Education," National Science Foundation, Arlington, VA, March 10, 1998
- (k) Chair of expert advisory workshop, sponsored by U.S. Environmental Protection Agency, Risk Assessment Forum, held April 21-22, 1998 in New York City.
- (l) Member of Residual Risk Subcommittee, appointed by US EPA's Science Advisory Board (SAB) Executive Committee, to review EPA's draft Report to Congress on Residual Risk Assessment. The subcommittee met in RTP on August 3, 1998. The subcommittee's report will be completed in September 1998. Contributed independent review comments, participated in

panel discussions, provided post-meeting comments in a written report, reviewed the draft report of the subcommittee prepared by the chair, and provided additional comments interactively with other members of the committee.

- (m) Invited to serve on a U.S. Environmental Protection Agency Science Advisory Panel (SAP) that met May 24-25, 1999 in Crystal City, VA, to review a draft EPA report related to pesticides. The SAP is a peer-review activity mandated by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), similar in nature to the EPA Science Advisory Board.
- (n) Invited to serve on a U.S. Environmental Protection Agency Science Advisory Panel (SAP) that met March 1-2, 2000 in Crystal City, VA, to review draft EPA reports related to risk assessment of human exposure to pesticide residues in produce. Contributed substantially to the report of the SAP.
- (o) Served as an outside reviewer on a Technical Qualifications Board (TQB) in the National Center for Environmental Assessment of the U.S. Environmental Protection Agency on March 8, 2000 in Research Triangle Park, NC. A TQB is similar to a promotion review committee. The TQB reviewed the technical and scientific qualifications of a particular EPA employee who is a candidate for promotion to a higher grade level within the Federal civil service.
- (p) Participant in “North Carolina Air Quality Roundtable: Transportation Conformity.” The Roundtable is a group of leaders from Federal, state, and local government, industry, public interest groups, and academia to develop strategies for dealing with transportation and air quality issues. Participated in four sessions of the Roundtable from August 2001 through March 2002. The roundtable was organized by the Center for Transportation and the Environment.
- (q) Participant in March 5, 2002 meeting of the Greater Triangle Regional Council on the topic of air quality and transportation. Held at RDU Airport Authority building. Another meeting is planned for April/May 2002 and I plan to participate if possible.
- (r) Peer Review, Food Safety and Inspection Service draft report on “Draft FSIS Risk Assessment for Listeria in Ready-to-Eat Meat and Poultry Products,” prepared a 21 page report containing detailed comments on modeling methodology, March 2003.
- (s) Appointed to a four year time on the EPA FIFRA SAP (please see items *m* and *n* above). April 2004-August 2006.
- (t) Invited member, National Research Council Committee on the Effects of Changes in New Source Review Programs for Stationary Sources of Air Pollutants, March 2004 to Summer 2006.
- (u) Review of SBIR proposal for USDA, April 2004.

- (v) Member of Technical Panel, Probabilistic Risk Analysis Working Group, Risk Assessment Forum, U.S. Environmental Protection Agency, and Co-Chair of Working Group 1 – Utility of PRA for Decision Making (preparing a white paper), August 2006 to present.
- (w) Clean Air Scientific Advisory Committee (CASAC): provides scientific review for the National Ambient Air Quality Standards.
 - i. Member of statutory CASAC, appointed by the Administrator of the U.S. Environmental Protection Agency to a three – year term (October 2008 to September 2011).
 - ii. Reappointed by EPA Administrator to 2nd three-year term October 2011 to September 2014.
 - iii. Appointed by EPA Administrator as Chair of CASAC October 1, 2012 to June 30, 2015.
 - iv. Member, Particulate Matter (PM) Review Panel, September 2007 to July 2010.
 - 1. Review of Draft Integrated Review Plan, Teleconference, November 30, 2007.
 - 2. Review of 1st Draft of the Integrated Science Assessment, and Scope and Methods Plan for the Risk and Exposure Assessment, Public Meeting, April 1-2, 2009, Chapel Hill, NC
 - 3. Review of 2nd Draft of the Integrated Science Assessment, 1st Draft of the Risk and Exposure Assessment, and 1st Draft of the Visibility Assessment, Public Meeting, October 5-7, 2009, Chapel Hill, NC
 - 4. Review of 2nd Draft of the Risk and Exposure Assessment, and 2nd Draft of the Visibility Assessment, 1st Draft of the Policy Assessment, Public Meeting, March 10-11, 2010, Chapel Hill, NC.
 - 5. Review of 2nd Draft of the Policy Assessment, Public Meeting, July 26-27, 2010, Chapel Hill, NC.
 - v. Member, Particulate Matter (PM) Review Panel, 2015 to October 2018 (panel disbanded by EPA Acting Administrator Wheeler).
 - vi. Member, Carbon Monoxide (CO) Review Panel,
 - 1. Review 1st Draft of Integrated Science Assessment, and Scope and Methods Plan for the Risk and Exposure Assessment, Public Meeting, May 12-13, 2009, Chapel Hill, NC.
 - 2. Review 2nd Draft Integrated Science Assessment and 1st Draft Risk and Exposure Assessment, Public Meeting, November 16-17, 2009, Chapel Hill, NC

3. Review 2nd Draft Risk and Exposure Assessment, and Draft Policy Assessment, Public Meeting, March 22-23, 2010, Chapel Hill, NC.

vii. Nitrogen Dioxide (NO₂) Review Panel

1. Review of Proposed Rule for the Revision of the NAAQS for NO₂, public teleconference, August 10, 2009.
2. Chair, Oxides of Nitrogen Review Panel, March 2013 to June 2015.
 - a. Held teleconference meeting in June 2014 to review the 1st Draft of the Integrated Science Assessment.
 - b. Review of 1st Draft of the Integrated Science Assessment, March 12-13, 2014, Raleigh, NC
 - c. Review of 2nd Draft of the Integrated Science Assessment, and the 1st Draft of the Risk and Exposure Assessment, June 2-3, 2015, Raleigh, NC.
 - d. Review of Scope and Methods Plan for the Risk and Exposure Assessment, June 2-3, 2015, Raleigh, NC.
3. Member, October 2015 – March 2017
 - a. Review of draft Policy Assessment for Review of the Primary NAAQS for Nitrogen Dioxide, November 9-10, 2016, Alexandria, VA.

viii. Sulfur Dioxide (SO₂) Review Panel

1. Review of 2nd Draft, Risk and Exposure Assessment, Public Meeting, April 16-17, 2009. Chapel Hill, NC.
2. Consultation on Integrated Review Plan, April 22, 2014 and June 11, 2014.
3. Review 1st draft of EPA Integrated Science Assessment for Sulfur Oxides, January 27-28, 2016, Raleigh, NC
4. Review 2nd draft of EPA Integrated Science Assessment for Sulfur Oxides, and Risk and Exposure Assessment Planning document, March 20-21, 2017, Arlington, VA.

ix. SO_x/NO_x Secondary Standard Review Panel

1. Review of Second Draft, Risk and Exposure Assessment, Public Meeting, July 22-23, 2009, Durham, NC.
2. Review of 2nd Draft Policy Assessment, Public Meeting, October 6-7, 2010, Durham, NC.

3. Review of Final Policy Assessment, Public Meeting, February 15-16, 2011, Chapel Hill, NC
- x. Lead Review Panel (Chair of Panel)
 1. Review of Integrated Review Plan –May 5, 2011
 2. Review of 1st Draft Integrated Science Assessment –July 20-21, 2011, RTP, NC
 3. Review of 2nd Draft Integrated Science Assessment – April 10-11, 2012, RTP, NC
 4. Review of 3rd Draft Integrated Science Assessment and 1st Draft of Policy Assessment, February 5-6, 2013, Cary, NC; followed by April 1, 2013 teleconference to review draft report to Administrator – prepared two letter reports with attached panel consensus responses to charge questions.
 - xi. Ozone Review Panel (Chair October 1, 2012 to completion in June 2014)
 1. Review of First Draft Integrated Science Assessment and Scope & Methods Plan for Risk and Exposure Assessment, May 19-20, 2011, RTP, NC
 2. Review of Second Draft Integrated Science Assessment, January 9-10, 2012, RTP, NC
 3. Review of 3rd Draft Integrated Science Assessment, 1st Draft Risk and Exposure Assessment (Human Health, Ecosystems), 1st Draft of Policy Assessment, September 11-12, 2013, Durham, NC (followed by teleconferences to revise CASAC draft report to Administrator) – prepared three letter reports with attached panel consensus responses to charge questions.
 4. Review of 2nd drafts of Risk and Exposure Assessment and Policy Assessment, March 25-27, 2014, Chapel Hill, NC and teleconferences held on May 28, 2014 and June 4, 2014.
 - xii. Ad hoc: as a past chair of CASAC, former member of the Ozone Review Panel, and member of the disbanded PM Review Panel, I have invited colleagues of CASAC and these panels to collaborate on providing written and oral comments to the EPA and current CASAC regarding recent changes to the NAAQS review process and to the CASAC itself (October 2018 to present). Chair of Independent Particulate Matter Review Panel.
 - (x) Invited member of ad hoc peer review panel to review the U.S. Environmental Protection Agency's draft Report on the Environment, Washington, DC, January 11, 2008.

- (y) Invited member of ad hoc peer review panel to review nine proposals, National Science Foundation, Washington, DC, January 28, 2008.
- (z) Invited member, U.S. Environmental Protection Agency, Advisory Council on Clean Air Compliance Analysis, Review of the Characterization of Uncertainty in the Estimated Benefits of Reduced PM-Mortality using Expert Elicitation, Washington, DC, May 8, 2008. Report completed in July 2008.
- (aa) Invited member, National Research Council Committee on Tetrachloroethylene, August 2008 to September 2009.
- (bb) Member, U.S. EPA Science Advisory Board (SAB) Expert Elicitation Advisory Panel, November 2008 – June 2009.
- (cc) Member, Board on Environmental Studies and Toxicology, National Research Council, October 2009 to September 2012.
- (dd) Invited Expert Panelist, US EPA Multipollutant Science and Risk Analysis Workshop, February 22-24, 2011, Chapel Hill, NC (served on four panels).
- (ee) Invited Expert, U.S. EPA Advisory Council on Clean Air Compliance review of EPA's draft Report to Congress on black carbon particulate matter, April 18-19, 2011, Washington, DC.
- (ff) Member, EPA Science Advisory Board, October 2012 to September 2018, appointed by EPA Administrator
 - i. Member, working group on science review for future regulatory actions, February 2013 – present. Reviewed approximately a dozen proposed EPA actions to identify priorities for SAB review. Multiple workgroup meetings by teleconference to identify actions for SAB consideration.
 - ii. During 2017-2018 academic year, reviewed EPA planned regulatory actions on the Clean Power Plan, light duty vehicle greenhouse gas emission standards for MY 2022-2025 vehicles, and proposed repeal of emission limits for glider vehicles, glider kits, and glider engines ("gliders" are tractor-trailer trucks with a new chassis but an old engine and powertrain). Several of these needed significant assessment.

Other Public Service. Extensive activities as session organizer, session chair, and reviewer of conference papers. Selected examples:

Invited presenter and participant in EPA “Workshop on Monte Carlo Analysis,” held in New York City on May 14-16, 1996.

Chair, *Workshop on Selecting Input Distributions for Probabilistic Assessments*, sponsored by the U.S. EPA and held in New York City, 1998

Invited to present and participate at a U.S. Environmental Protection Agency workshop on “Approaches to Uncertainty in Greenhouse Gas Emissions Inventories,” held September 9, 1998 in Washington DC.

Organized NCSU/USDA Workshop on Sensitivity Analysis, March 11, 2003, held in Washington, DC.

Invited presenter, U.S. EPA Colloquium on Probabilistic Methods, Washington, DC, April 21, 2004.

Session co-organizer, German-American Frontiers of Engineering (GAFOE) meeting, Potsdam, Germany, May 5-7, 2005, co-sponsored by National Academy of Engineering and the Humboldt Foundation

Chair, Working Group II, Workshop on Uncertainty in the U.S. EPA Assessment of the Impact of Global Change on U.S. Air Quality, U.S. Environmental Protection Agency, Research Triangle Park, NC, November 1-2, 2006.

Co-organized and delivered a workshop on uncertainty in exposure assessment, in collaboration with colleagues who served on a World Health Organization working group. Delivered the workshop at the EUROTOX annual meeting in Rhodes, Greece in October 2008.

Developed and delivered a two-day workshop on uncertainty in national greenhouse gas emission inventories for the Greenhouse Gas Division of Environment Canada, Gatineau, Quebec, March 16-17, 2009.

Invited Participant, workshop on “ExpoDat 2012: Exposure Determinants for High-Throughput Exposure Assessment,” Long Range Research Initiative, American Chemistry Council, held June 14-15, 2012 in Budapest, Hungary.

Invited Panelist (2 sessions), Workshop on Weight of Evidence of the National Research Council Committee to Review the Integrated Risk Information System (IRIS) Process, The National Academies, Washington, DC, March 27-28, 2013.

Invited Panelist, “Perspectives on the EPA Laboratories,” National Research Council Committee on Strengthening the U.S. Environmental Protection Agency Laboratory Enterprise, The National Academies, Washington, DC, September 17, 2013

Invited Participant, “Stakeholder Workshop on Informing Risk Assessment: Understanding and Communicating Uncertainty in Hazard Assessment,” Center for Advancing Risk Assessment Science and Policy, American Chemistry Council, Washington, DC, November 6, 2013.

Organized a one day workshop on: Comparison of Air Pollution for Transportation Environments (CAPTEN). Held Friday, June 19, 2015 at Department of Civil, Construction, and Environmental Engineering at NC State. Invited speakers included: Prashant Kumar of University of Surrey, UK; Zhi Ning of City University of Hong Kong; Ana V... of Instituto Superior Tecnico, Lisbon, Portugal; Alexis Lau and Wenwei Che of Hong Kong University of Science and Technology; Gayle Hagler of the U.S. Environmental Protection Agency, RTP, NC.; and H. Christopher Frey, CCEE

Chair of Student Program Committee and member of local host committee for 2015 Annual Meeting of the of Air & Waste Management Association held in Raleigh, NC, June 22-25.

Member of Academic Committee, 5th International Symposium on Regional Air Quality Improvement in Rapidly Developing Economic Regions, November 16-19, 2017, Guangzhou, China.

Member of organizing committee, 23rd International Transport and Air Pollution Conference 15-17 May 2019, Thessaloniki, Greece.

Member of organizing committee, Air & Waste Management Association (A&WMA) Specialty Conference on Freight & Environment: Ports of Entry, October 23-24, 2019, Newark, NJ. Invited speakers, reviewed abstracts, contributed to session planning.

Member of organizing committee, 24th International Transport and Air Pollution Conference, 15-16 September 2020, Graz, Austria

INTERNATIONAL PUBLIC SERVICE

- (a) Invited to join the United States delegation to Intergovernmental Panel on Climate Change (IPCC) Expert Panel on Good Practice in Inventory Preparation: Cross-Sectoral Methodologies for Uncertainty Estimation and Inventory Quality, held October 5-7, 1999 in Culham, England (near Oxford). I was an active participant in Working Group 2: Quantifying Uncertainties in Practice and contributed substantially to the draft guidelines on uncertainty analysis of greenhouse gas emission inventories. The expert meeting was attended by approximately 100 experts from approximately 40 countries. My participation in the meeting was sponsored by the U.S. Environmental Protection Agency.
- (b) Peer Review, Joint FAO/WHO Guidelines on Exposure Assessment of Microbial Hazards in Food and Water, Fall 2002.
- (c) Drafting Group member and Invited Participant, Joint FAO/WHO Workshop on “Guidelines on Risk Characterization of Microbiological Hazards in Food,” Helsingor, Denmark, February 24-28, 2003. Drafted sections on quantitative analysis of variability and uncertainty and regarding sensitivity analysis methods in collaboration with other international experts.
- (d) Invited participant, international workshop on probabilistic exposure assessment, Belgium, November 2003.
- (e) Steering Committee member and lead author, NARSTO Emission Inventory Assessment, 2003-2005. NARSTO is a trilateral Canadian, U.S., and Mexican organization.
- (f) Invited member of organizing committee, German-American Frontiers of Engineering symposium for May 2005, National Academy of Engineering

- (g) Invited Lead Author, Intergovernmental Panel on Climate Change (IPCC), Revisions to existing guidance on uncertainty analysis of greenhouse gas emissions. Attended lead author meetings in Oslo, Norway, May 4-6, 2004, Manila, the Philippines January 11-13, 2005, Sydney, Australia, December 15-17, 2005, and Moscow, Russia, July 2006.
- (h) Invited participant in World Health Organization (WHO) effort to develop international guidance on probabilistic exposure assessment, 2005-2007. The final working group drafting meeting was in March 2007 in Bradford, England. This WHO working group subsequently delivered workshops to communicate our findings at the Eurotox annual meetings in Rhodes, Greece (2008), and in Dresden, Germany (2009).
- (i) Invited participant, NARSTO Multi-pollutant air quality management assessment, 2007. NARSTO is a trilateral Canadian, U.S., and Mexican organization. Attended kick-off meeting in RTP, NC January 9-10, 2007. Will attend ecological effects working group meeting in Burlington, VT, April 12-13, 2007.
- (j) Co-organizer of International Seminar on Transportation and Impacts, March 6, 2008, Lisbon, Portugal.
- (k) Founding member of core group of the Luso-American Transportation Impact Studies Group (LATIS-G), formed on March 7, 2008 in Lisbon, Portugal. Regular meetings in Portugal approximately 1-2 times per year (e.g., December 2012 and March 2013).
- (l) Invited Expert, National Greenhouse Gas Inventory Program, Intergovernmental Panel on Climate Change, IPCC Expert meeting for Technical Assessment of IPCC Inventory Guidelines (Cross-sectoral issues), 27-29 April 2016, Wollongong, Australia.
- (m) Guest Editor, Special Issue on Transportation and Air Quality, *Atmospheric Environment*, 2019-2020
- (n) Guest Editor, Special Issue on “In-use Vehicle Emissions: New Insights, Applications, Technologies and Policy Implications, *Science of the Total Environment*, 2019-2020.
- (o) Invited Editor of a submitted manuscript, *Proceedings of the National Academy of Sciences*, 2020.

AVI GARBOW

(b) (6)

Environmental lawyer, leader, and advocate with decades of significant public and private sector experience in developing and implementing solutions that protect our planet.

EXPERIENCE

2019 – PRESENT

ENVIRONMENTAL ADVOCATE, PATAGONIA WORKS

Provide strategic leadership on global environmental policies to international apparel and food businesses, and to sustainable company startup investor, with active portfolio of environmental and conservation issue activism. Represent Patagonia on several business-oriented climate action coalitions and serve as key spokesperson on issues ranging from climate change, agriculture and land use policies, marine pollution, and sustainable business operations.

2017 – 2019

PARTNER AND CO-CHAIR OF GLOBAL ENVIRONMENTAL PRACTICE, GIBSON DUNN & CRUTCHER

Represented domestic and international clients in wide-ranging environmental law and policy practice. Recognized by the National Law Journal as a 2017 Environmental Trailblazer, and frequent speaker at business forums on issues regarding climate strategies, sustainability, Environmental, Social and Governance standards, and federal and state environmental laws and policies.

2009 – 2017

GENERAL COUNSEL AND DEPUTY GENERAL COUNSEL, U.S. ENVIRONMENTAL PROTECTION AGENCY

Confirmed by unanimous consent of the U.S. Senate, served as chief legal advisor to the Agency and its senior leadership and became the longest-serving General Counsel in EPA history. Prior to confirmation served as the Agency's Deputy General Counsel. Provided legal and policy counsel for the full range of Agency actions, including the development of regulations, guidances, and policies under every major environmental statute, and for matters concerning personnel, Congressional oversight, budgets, and other operational concerns. Significant responsibilities and achievements included:

- * Initiated unprecedented external Office of General Counsel engagement with Agency stakeholders and received bipartisan praise for effective outreach to state Attorneys General and the Environmental Council of the States, while leading the Office's overwhelmingly successful legal defenses of the Administration's regulatory actions.

- * Served as a key legal architect of major elements of President Obama's Climate Action Plan. Led EPA delegation to the U.S.-China Strategic & Economic Dialogue in Beijing in

2014 and 2016, participated in the U.S. China Climate Change Working Group, and led Agency engagements with environmental ministries in China and Vietnam.

* Held first-ever General Counsel forum at the National Congress of American Indians and led ground-breaking EPA efforts to address treaty rights in decisions impacting fisheries and land use.

* Led the Office of General Counsel to its first-ever recognition by *The Legal 500* as Best Team – Environment in 2014 and 2015, and named to its *GC Powerlist*.

2005 – 2009

PARTNER, COHEN MILSTEIN SELLERS & TOLL

Represented public and private clients in a litigation-intensive law practice and served as Co-Chair of the firm's international human rights practice. Helped to lead litigation team in the resolution of class actions involving the groundbreaking use of courts in The Netherlands to settle international class claims. Promoted from Counsel position in 2006.

2002 – 2005

JUNIOR PARTNER, WILMERHALE

Represented corporate and individual clients in wide range of matters in litigation, including environmental, antitrust, securities, intellectual property, and contracts disputes. Conducted internal investigations concerning allegations of financial and other misconduct. Promoted from Associate position in 2004.

1996 – 2002

TRIAL ATTORNEY, ENVIRONMENTAL CRIMES SECTION, AND WILDLIFE AND MARINE RESOURCES SECTION, U.S. DEPARTMENT OF JUSTICE

Prosecuted environmental crimes under most major environmental and federal fraud statutes in jurisdictions around the country. Active grand jury and investigative practice, and first-chair trial experience. Received repeated recognition from the Department of Justice for superior performance, and served as an instructor at the Department's National Advocacy Center. Significant experience in representing federal agencies, including the Department of the Interior and the Department of Commerce, on matters involving the Endangered Species Act and marine protection statutes.

1992 – 1996

ATTORNEY/ADVISOR, OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE, U.S. ENVIRONMENTAL PROTECTION AGENCY

Analyzed enforcement referrals for civil litigation arising predominantly under the Clean Water Act and the Safe Drinking Water Act. Advised regional attorneys and national program offices on implementation and enforcement of those statutes, and assisted Agency task forces responsible for both the reorganization of the Agency's regional enforcement components and the establishment of the Office of Enforcement and Compliance Assurance. Served on the first enforcement task force on environmental justice.

EDUCATION

MAY 1993

MASTER OF ARTS, MARINE AFFAIRS, UNIVERSITY OF VIRGINIA GRADUATE SCHOOL OF ARTS & SCIENCES

MAY 1992

JURIS DOCTOR, UNIVERSITY OF VIRGINIA SCHOOL OF LAW

Recipient of Robert F. Kennedy Award for Public Service

Charlottesville Volunteer Firefighter

MAY 1988

BACHELOR OF ARTS, MAGNA CUM LAUDE, UNIVERSITY OF MICHIGAN

BOARD SERVICE

Rare – Elected to the Board of Trustees for international conservation organization with emphasis on sustainable fisheries and behavioral changes for environmental outcomes.

Organic Trade Association – Elected to the Board of trade association representing thousands of organic businesses, farmers and ranchers throughout the agriculture and food value chain.

PROFESSIONAL EXPERIENCE

Harvard Law School, Environmental and Energy Law Program

2017-Present

Executive Director

- Leading and managing team of legal researchers and communications specialists focusing on developing, and disseminating to stakeholders, government decision makers and the media, innovative responses to emerging issues in the areas of federal, state and municipal energy and electricity law and environmental and administrative law as well as in selected areas of corporate law.

U.S. Senate, Committee on Environment and Public Works

2017

Democratic Chief Counsel

January-September

- Provided legal counsel to Ranking Member, Staff Director and professional staff on a wide range of environmental laws and regulations, infrastructure authorities, judicial proceedings, ethics and Senate procedure.

U. S. Environmental Protection Agency, Office of Air and Radiation, Washington, D.C.

2009 - 2017

Associate Assistant Administrator for Climate

March, 2013-2017

Senior Counsel

October, 2009-2017

- Provided policy and legal counsel to the Assistant Administrator, and coordinated activities with senior OAR, Office of General Counsel and agency management, as well as engaged with counterparts in other agencies and in the Executive Office of the President on a wide range of climate policy and Clean Air Act regulatory and implementation issues and rulemakings and their legal defense in federal court
- Led, co-led and/or managed, the development of a variety of rulemakings, guidances and other policy products, including:
 - Clean Power Plan,
 - Carbon Pollution Standards,
 - Mercury and Air Toxics Standards,
 - New Source Performance Standards and Control Technique Guidelines for Oil and Gas,
 - Cross State Air Pollution Rule and Update,
 - Rules related to HFCs
 - Industrial Boiler MACT
 - Tailoring Rule
 - Refineries Rule
 - Biomass policies;
- Served "on point" in providing EPA's contributions to President Obama's 2013 Climate Action Plan as well as the Administration's Methane Strategy

U.S. Senate, Committee on Environment and Public Works, Washington, D.C.

2008 - 2009

Majority Senior Counsel

- Provided legal and policy counsel and analysis to Chair and Majority on climate change and Clean Air Act issues

U. S. Senate, Senator Joseph I. Lieberman, Washington, D.C.

2005 - 2008

Legislative Director

April, 2006-October, 2008

- Oversaw the work of legislative staff for United States Senator in his work as a senior Member of the Committee on Armed Services, the Committee on Environment and Public Works, and the Committee on Small Business, as well as on all legislative matters coming before the Senate.
- Served as a member of a management team with Chief of Staff and Communications Director, as well as with the Staff Director and Chief Counsel to the Majority of the Committee on Homeland Security and Governmental Affairs.
- Supervised major legislative initiatives and activities that included climate change (Lieberman-Warner), energy security, the ADVANCE Democracy Act, appropriations, education, health care, trade, taxes, commodities

speculation, competitiveness and innovation, military end-strength, media and values, and a variety of national security, legal and foreign policy issues.

Stennis Fellow

110th Congress

Lieberman for Connecticut, Policy Team Leader (Part-time Volunteer)

April, 2006-November, 2006

- During non-working hours, drafted, and coordinated the efforts of policy volunteers to create, materials and text for speeches, press releases, position papers and debate-preparation files.

Legislative Assistant/Counsel

April, 2005-March, 2006

- Provided legislative staffing to United States Senator in his work as a senior Member of the Committee on Environment and Public Works, including climate policy and the Clean Air Act as well as in areas of energy policy, Indian Affairs and agriculture.

Office of Joseph Goffman, Washington, DC

2004 - 2005

- Consulted for non-profit environmental and conservation organizations on matters of federal and state policy development
- Served as *pro bono* counsel to political asylum-seekers in US Immigration Court under auspices of Capital Area Immigrants Rights Coalition and Human Rights First
- Researched, drafted and published article in environmental policy journal.

Environmental Defense Fund, Washington, D.C.

1992 - 2004

Program Manager and Senior Attorney, Climate and Clean Air Program

- On behalf of a 300,000-member scientific and policy research organization, developed market-based policy proposals for local, state, federal and international application, to reduce urban smog and greenhouse gases, in connection with the implementation of the Clean Air Act, the UN Framework Convention on Climate Change and the Kyoto Protocol
- Advanced these proposals through direct contact with auto manufacturers, electric utilities, and multinational petroleum, aluminum, and chemical companies, as well as through traditional public advocacy on the state, federal and international level.

Environmental Resources Trust, Washington, D.C.

1996 - 2005

Co-Founder and Secretary/Treasurer

- Led non-profit organization undertaking innovative market-based transactions aimed at producing environmental benefits in the areas of electricity marketing, management and trading of emissions of conventional pollutants and greenhouse gases, water use rights, and forest and land management.

U.S. Environmental Protection Agency, Office of Air and Radiation

1990 - 1992

Special Assistant/Section Chief, Acid Rain Division

- As member of Division management team, directed a staff of six public policy analysts and economists
- Developed and drafted all regulations governing the system for tracking and trading sulfur dioxide allowances pursuant to Title IV of the Clean Air Act
- Developed initiatives for promoting the use of allowance trading by utilities and state utility commissions

U.S. Senate, Committee on Environment and Public Works, Washington, D.C.

1989 - 1990

Associate Counsel

- Developed and drafted the provisions of the federal acid rain program under the Title IV of the Clean Air Act establishing the first U.S. marketable permit/"cap and trade" program for air pollution.

Environmental Defense Fund, Washington, D.C.

1987 - 1989

Senior Attorney

- Engaged in all aspects of advocacy before Congress and federal agencies
- Formulated major policy proposals, such as that adopted by the Bush Administration and the U.S. Congress establishing an acid rain emissions trading program
- Wrote and presented detailed substantive testimony before committees of Congress
- Met with Members and staff

- Devised legislative, media and grassroots strategies, participated in coalitions, spoke to the press, wrote op-ed pieces and spoke in public forums in areas of global warming, Clean Air, and solid waste management.

Public Citizen's Congress Watch, Washington, D.C

1984 - 1987

Staff Attorney

- Involved all aspects of legislative advocacy on behalf of citizens' group
- Wrote and presented detailed substantive testimony before committees of Congress
- Met with Members and staff
- Formulated legislative, media and grassroots strategies, organized coalitions of diverse interest groups, spoke to the press, wrote op-ed pieces and spoke in public forums.

Weil, Gotshal and Manges, New York, N.Y.

1982 - 1984

Litigation Associate (Mid-Level)

- Major cases involved product liability, complex commercial issues in movie and entertainment industry, real estate, dealer-franchising regulation, securities regulation, "Title X" family planning funding and pro bono representation of political asylum applicants.

New York City Health and Hospitals Corporation, New York, N.Y.

1981 - 1982

Counsel and Senior Analyst

- Provided policy analysis and legal counsel pertaining to the federal and state legislative and regulatory concerns of the City's municipal hospital system.

Legal Aid Society, Criminal Appeals Bureau, New York, N.Y.

1979 - 1981

Associate Appellate Counsel

- In court-appointed public defender office, researched, drafted and submitted substantive briefs and presented oral arguments in appeals of indigents' felony convictions.

Admitted to Practice:

- State of New York (1980)
- U.S. District Court of the Southern and Eastern Districts of New York (1981).

EDUCATION

Yale Law School, New Haven, CT.

1979

Juris Doctor

Yale College, New Haven, CT.

1976

Bachelor of Arts, Magna cum laude with distinction in Philosophy and English; awarded Snow, Lyman and Betts Prizes

SELECTED PUBLICATIONS

with Laura Bloomer, *How Statutory Interpretation of the Clean Air Act Serves the Trump Administration's Deregulatory Agenda*, Case Western Reserve Law Review, Case Western University School of Law, Volume 70, No. 4 (Summer 2020) <https://scholarlycommons.law.case.edu/cgi/viewcontent.cgi?article=4877&context=caselrev>

with Jody Freeman, "Rick Perry's Anti-Market Plan to Help Coal," *New York Times*, (October, 2017).

Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Executive Summary. (August, 2015) ("Clean Power Plan").

<https://www.epa.gov/sites/production/files/2015-08/documents/cpp-final-rule.pdf>

Title IV of the Clean Air Act: Lessons for Success of the Acid Rain Emissions Trading Program, Penn State Environmental Law Review, The Dickinson School of Law, Volume 14, No. 2 (Winter, 2006).

with staff of Environmental Defense, *From Obstacle to Opportunity: How Acid Rain Emissions Trading is Delivering Cleaner Air*, Environmental Defense (September, 2000).

with Dudek, D.J. and Petsonk, C.A., *Cooperative Mechanisms Under the Kyoto Protocol: The Path Forward*, Environmental Defense (June, 1998).

with Dudek, D.J., *Emissions Budgets: Building An Effective International Greenhouse Gas Control System*, Massachusetts Institute of Technology, Center for Energy and Environmental Policy Research (January, 1997).

with Wade, S. and Dudek, D.J., "Emissions Trading in Nonattainment Areas: Potential Requirements and Existing Programs"(book chapter), Kosobud, R.F., and Zimmerman, J.M., *Market-Based Approaches to Environmental Policy: Regulatory Innovations to the Fore*, Van Nostrand Reinhold (1997).

with Dudek, D.J., *The Clean Air Act Acid Rain Program: Lessons for Success in Creating a New Paradigm*, The Air and Waste Management Association (June, 1995).

with Dudek, D.J., *Flexibility for Responsibility: Focusing on Reductions rather than Technology in Vehicle Emissions Control*, Environmental Defense Fund (May, 1994).

"Less Acid Rain for the Buck," *New York Times*, (April, 1993).

with Dudek, D.J., "Can Preapproval Jump-Start the Allowance Market?", *Electricity Journal*, Vol. 5, No. (June, 1992).

"Discussion of Provisions, Title IV, Clean Air Act Amendments of 1989," *Report of the Committee on Environment and Public Works*, U.S. Senate, No. 101-228 (December, 1989).

PROFESSIONAL EXPERIENCE

BIDEN FOR PRESIDENT, PA DEMS

Regional Organizing Director,
Delaware County, Pennsylvania
August 2020 – November 2020

- Managed a team of six organizers and 100+ volunteers in Delaware County PA, contributing to 15.7% increase in countywide Democratic turnout and 4.4% increase in countywide win margin over 2016.
- Led the only region statewide to reach 100% to goal for all GOTV shifts; recruited 1,268 canvass shifts, equivalent to 213% to goal.
- Built and managed virtual and in-person organizing programs; launching 300+ events with 68 volunteer leaders and 4,100+ attendees.
- Trained organizers to build volunteer leadership teams, scale direct and relational voter contact, and hit weekly organizing goals.
- Created organizer-specific goals and coached organizers to create and implement actionable plans to hit these goals.
- Developed organizing training materials which were adopted statewide.

PETE FOR AMERICA

Organizer, Iowa and Texas
July 2019 – March 2020

Led organizing work in east Iowa City, earning delegates in 25 of Iowa's largest precincts and contributing to Mayor Buttigieg's statewide victory. Recruited and managed 5 precinct captains and 67 precinct leaders, building among the largest teams statewide. Directed persuasion and mobilization efforts through volunteer-led relational organizing trainings, phonebanks, and canvass launches. Coordinated San Antonio field program, growing volunteer team by 75%, hosting 8 organizing events with 120+ attendees, and generating 500+ relational conversations in two weeks.

TOM STEYER, NEED TO IMPEACH

National Organizing
Program Coordinator
March 2019 – June 2019

Previously:
Engagement Associate
October 2017 – March 2019

Supported 11 Organizing Managers and Organizing Director to mobilize and engage 8 million impeachment supporters. Implemented new voter contact tools to boost program outreach to 20k outgoing calls and 458k outgoing texts in two months. Launched 42 Town Halls in 26 states in the span of one year. Managed interests of field, political, digital, scheduling, and advance teams. Managed outreach, recruitment, confirmation, and post-event follow-up for 10,000+ attendees via text, email, phone, and digital communication. Created system in Google Sheets to track and analyze full-cycle attendee and RSVP data in order to improve turnout and engagement rates.

EDUCATION

BROWN UNIVERSITY

B.A. in Computer Science
B.A. in Latin American Studies

COMMUNITY ORGANIZING & LEADERSHIP

TECHSHIFT ALLIANCE | Founder & Director, Advisor | 2017 – 2019

Founded an alliance of university students working across 20 campuses in three countries to use technology as a force for good. Created organizational strategy and annual budget; raised \$75,000 through grants to fund salary, events, microgrants, and other operations.

Jamie Green

Greater Washington, DC Area | (b) (6)

Professional Experience

COMMUNITY ENGAGEMENT MANAGER – 59TH PRESIDENTIAL INAUGURAL COMMITTEE (REMOTE) DECEMBER 2020- JANUARY 2021

- Coordinated strategic outreach to community organizations and digital grassroots partners to amplify inaugural events
- Partnered with the digital engagement team to create campaigns that encourage the creation of user-generated content
- Assisted with outreach to community artists and viral internet sensations to enhance virtual programming

COALITIONS PROJECT DIRECTOR – BIDEN FOR PRESIDENT CAMPAIGN COMMITTEE (PHILADELPHIA, PA) MARCH 2020- NOVEMBER 2020

- Served as the program manager for the Biden/Harris disinformation mitigation program that consisted of a disinformation intake form, SMS reporting, and a [PSA-style video](#) that featured the cast of MTV's *Catfish* which resulted in 225K views across talent social platforms
- Managed coalition teams' programming in the *Vote Joe* app which included distributing actions, messages, and push notifications to 33.7K supporters which resulted in an approximate 50% action rate
- Worked with constituencies online to engage with them regarding issues such as racial justice, reproductive rights, education, and health care i.e. Talking to Your Kids About Race with JoeMamas ft. Yris Palmer, [On The Yard series ft. Yandy Smith-Harris and HBCU Students for Biden](#)
- Set-up digital processes and forms for the coalitions department to digitally engage with and capture the information of supporters who identified with their constituencies

DIGITAL DIRECTOR – BIDEN FOR PRESIDENT CAMPAIGN COMMITTEE (COLUMBIA, SC) AUGUST 2019- MARCH 2020

- Strategized and executed a social campaign for the "Soul of the Nation" Bus Tour which featured President-Elect Biden, that resulted in 130k impressions over 6 days
- Oversaw the state primary campaign's peer-to-peer texting program (Hustle) that ended with an engagement rate of 22% and an action rate of 3%
- Worked closely with principals and surrogates to produce engaging [social content](#) during their South Carolina visits
- Created a community of South Carolina supporters on [Facebook](#) that mobilized and engaged over 4K voters

SOCIAL CONTENT MANAGER – DEMOCRATIC NATIONAL COMMITTEE (WASHINGTON, D.C.) MAY 2018-AUGUST 2019

- Served as the point person for rapid response social media posts from @TheDemocrats and @TomPerez
- Drafted social content based on analytical data that predicted audience reactions to various visual media on our social platforms [Videos, GIFs, Photos]
- Strategized with the political departments about the best ways to communicate with their constituencies digitally

PRESS ASSISTANT – REP. CEDRIC RICHMOND (WASHINGTON, D.C.)

MAY 2016- MAY 2018

- Spearheaded the Congressional Black Caucus’ inaugural [Live Twitter Q & A](#), which helped to engage millennials in policy conversations, that resulted in 633K Twitter impressions within 24 hours
- Conceptualized and directed Rep. Richmond's [first Twitter Roundtable](#) about health care legislation with local and national health experts which resulted in 60K Twitter impressions in one hour
- Managed the hiring and training of 3-4 interns per semester (Fall, Spring, & Summer)

Memberships

ALPHA KAPPA ALPHA SORORITY, INCORPORATED

NOVEMBER 2014- CURRENT

The University of Louisiana at Lafayette, Lafayette, LA - Epsilon Beta Chapter

Acknowledgments

WATCH THE YARD

“THE COALITIONS PROJECT DIRECTOR FOR THE JOE BIDEN CAMPAIGN IS A SOROR OF ALPHA KAPPA ALPHA”

[Read here](#)

ESSENCE MAGAZINE

“THE BLACK WOMEN BEHIND THE BIDEN-HARRIS CAMPAIGN”

[Read here](#)

POPSUGAR

“THE DIVINE NINE IS MOVING HEAVEN AND EARTH TO GALVANIZE BLACK VOTERS FOR JOE BIDEN AND KAMALA HARRIS”

[Read here](#)

Education

BACHELOR OF ARTS (B.A) -PUBLIC RELATIONS

The University of Louisiana at Lafayette, Lafayette, LA

LINDSAY HAMILTON

(b) (6)

EXPERIENCE

CLIMATE NEXUS

Washington, DC
2019 – present

SENIOR DIRECTOR, NATIONAL MEDIA STRATEGY

- Leader and team manager for a mid-sized non-profit providing strategic communications resources and services to allies across the country.
- Drive national media strategy for cutting edge climate communications campaigns focused on fossil fuel transition and climate policy.
- Manage and mentor a team of talented communications professionals.
- Interface with donors, partners and coalition leaders.
- Led a campaign to show support for climate action through polling in states hosting 2020 primary debates. Placed coverage in the New York Times, Houston Chronicle, TIME, The Atlantic, and Detroit Free Press, among others.
- Unite polling, research and digital resources in support of data-driven communications campaign work.

THE GEORGE WASHINGTON UNIVERSITY

Washington, DC
2017 – 2019

EXECUTIVE DIRECTOR OF MEDIA RELATIONS

- Chief spokesperson for the largest university in Washington, DC.
- Led strategic communications for the university's new president. Placed positive stories in the Washington Post and Wall Street Journal.
- Managed a team of media relations professionals providing services to the departments and schools across the university.
- Maintained relationships with key national, local and campus media.
- Ran the university's media training program, conducting trainings for senior staff, faculty, researchers and students.
- Experience in crisis communications and major event media logistics.

CENTER FOR AMERICAN PROGRESS

Washington, DC
2012 – 2017

CHIEF OF STAFF AND VICE PRESIDENT

- Served in a senior management role at a 300-person non-profit think tank.
- Worked closely with the organization president, advising on institutional strategy and high-level decisions. Member of the Executive Committee.
- Led priority projects, including the organization's signature annual conference and other high visibility initiatives.
- Managed and mentored the executive team staff.
- Managed the Board of Trustees and stakeholder advisory councils. Liaised with the Board of Directors, donors and stakeholders.

DIRECTOR OF MEDIA STRATEGY

- Senior member of the press team responsible for broadcast media outreach.
- Guided policy teams on messaging and strategy.
- Pitched, booked and prepped experts for more than 700 interviews per year.
- Media trained more than 500 people. Wrote original media training curriculum.

**OFFICE OF
CONGRESSMAN
STEVE ISRAEL**

Washington, DC
2008 – 2011

**STEVE ISRAEL
FOR CONGRESS**

Huntington, NY
2010

ABC NEWS

Washington, DC
New York, NY
2006 – 2008

**OFFICE OF SENATOR
CHUCK HAGEL**

Washington, DC
2004 – 2005

EDUCATION

COLUMBIA UNIVERSITY

New York, NY

**THE GEORGE
WASHINGTON
UNIVERSITY**

Washington, DC

COMMUNICATIONS DIRECTOR

- On-the-record spokesperson for a member of the House leadership.
- Wrote press releases, op-eds, speeches, and e-newsletters.
- Planned press conferences and successfully pitched national, NY and DC media.
- Redesigned the website, winning an award for the best website in Congress.
- Ran the franked mail, marketing and social media operations.

CAMPAIGN MANAGER

- Ran a successful congressional campaign during the competitive 2010 cycle.
- Served as chief strategist and on-the-record spokesperson.
- Oversaw the field, budget, paid media and get out the vote efforts.
- Managed staff, interns and volunteers in two offices.

PRODUCTION COORDINATOR, *THIS WEEK*

- Produced the weekly “Sunday Funnies” segment for air.
- Assisted the Executive Producer with research, ratings tracking and awards.

DESK ASSISTANT, *WORLD NEWS TONIGHT*

- Wrote politics and feature stories for ABCNews.com.
- Assisted with research, guest bookings, shoots and conducted field interviews.

SCHEDULER AND PERSONAL ASSISTANT

- Managed the Senator’s daily calendar and scheduling requests.
- Compiled the daily briefing book, working with policy staff on memos.
- Staffed high-level meetings and advised on scheduling priorities.

MASTER OF INTERNATIONAL AFFAIRS

International Media and Communications Program
IMC Fellowship Award

B.A. INTERNATIONAL AFFAIRS AND POLITICAL SCIENCE

Elliott School of International Affairs
Graduated Magna Cum Laude

SH

SINCÉRÉ A. HARRIS

(b) (6)

PROFESSIONAL SUMMARY

Highly competent and successful strategist with years of senior-level experience in developing strategies to define, communicate and attain political goals.

SKILLS

- Leadership
- Budgeting
- Decision-making
- Messaging
- Strategic Planning
- Relationship management

WORK HISTORY

Executive Director | Pennsylvania Democratic Party - Philadelphia 10/2015 - CURRENT

- Formed 2020 coordinated organizing team; oversaw and managed initial 50 organizing hires
- Oversaw management and execution of 2018 coordinated campaign
- Responsible for coordination between statewide gubernatorial, senatorial campaigns and State Party
- Approved and managed \$4M coordinated budget
- Developed and executed electoral strategies for statewide Democratic campaigns for Governor, United States Senate, Lt. Governor, row offices, and statewide judicial candidates
- Developed and coordinated strategic communications, digital, political, and field plans between various campaigns
- Helped develop annual strategic goals, benchmarks, and budgets for Finance, Communications, Digital, and Organizing departments
- Managed and directed legal team
- Oversaw Compliance operations
- Responsible for preparing and presenting annual \$1.5M-\$3.7M budget to Executive Board for approval
- Planned and executed state conference of 370 members, held quarterly
- Planned and executed large-scale events for presidential, gubernatorial, and senatorial campaign events
- Managed organizing and training departments
- Conducted weekly one-on-one departmental development and program implementation sessions
- Directed recruitment, interview, and onboarding process for 100+ organizers
- Liaised, advised, and directed 67 county and local parties
- Reviewed, revised, and approved thousands of pieces of mail for Democratic candidates running for local, state, and federal office
- Approved all on-the-record communications
- Approved training materials for field organizers
- Elected to serve as Northeast Regional Representative for the Association of State Democratic Committees (ASDC)
- Liaised with 50+ counterparts in Democratic State Parties nationwide
- Launched first annual Independence Dinner - a large-scale, fully-produced,

high-profile, with statewide attendance, headlined by Speaker Pelosi

Pennsylvania Senior Advisor | Joe Biden For President -
Philadelphia, PA

07/2020 - 11/2020

- Senior leadership team member; delivered Pennsylvania's 20 electoral votes for President-Elect Joe Biden
- Set record statewide turnout
- Reached historic turnout in key cities and counties (turned out more votes in Philadelphia than any presidential candidate since 1968)
- Flipped 2 out of 3 'pivot counties' back to Democratic win column.
- Co-led development, management, and implementation of strategic plan for 2020 Presidential Coordinated Campaign in Pennsylvania
- Advised coordinated campaign team upwards of 200 staff across organizing, political, voter protection, coalitions, communications, and digital organizing departments
- Implemented statewide messaging campaign targeting various electoral demographics based on data informed by qualitative and quantitative research.
- Oversaw management of fifteen-person political and coalitions teams and weekly execution of strategic plan
- Responsible for scouting, pitching, and executing ideas for in-state principal visits (Vice President & Dr. Biden, Sen. Harris & Doug Emhoff)
- Liaised between the campaign and senior state elected officials, including the Senator, Governor, members of Congress, State Legislature leadership, as well as county executives and big city mayors
- Responsible for regular briefings of key stakeholders including elected officials, labor and community leaders
- Advised and approved \$3.6M in-state budget
- Managed roughly \$1M Visibility budget for key urban areas across PA
- Assisted in and approved in-state paid communications programs for digital, mail, radio, and TV advertising.
- Advised in-state polling strategy
- Provided campaign headquarters with regular briefings on progress of statewide campaign
- Briefed principals for in-state campaign visits and in-state media appearances
- Advised and approved training materials for Organizing, Political, Coalitions, Voter Protection, and Communications departments

Assistant Deputy, Legislative Affairs | Commonwealth Of
Pennsylvania - Harrisburg, PA

01/2015 - 10/2015

- Liaised between Governor's Office, both houses of State Legislature, and State Agencies
- Advocated on behalf of Administration's position on legislation
- Helped pass largest funding levels for education in Pennsylvania's history
- Represented the Governor in legislative and policy discussions
- Responsible for scoring all bills on legislative calendar - registering positions from the Governor's Budget, Policy & General Counsel offices
- Prepared Governor's daily legislative dashboard, detailing legislation before

the General Assembly - from progression from committee to floor votes, concurrence and final passage

Deputy Director | Wolf Inaugural Committee - Harrisburg, PA 11/2014 - 01/2015

- Assisted in overall planning and execution of the inauguration of Pennsylvania's 47th Governor
- Responsible for communication and coordination between inaugural committee and State Legislature
- Managed ticket distribution and seating for VIP elected officials, donors, and labor, community, & faith leaders
- Helped coordinate with State Police, General Services, and Inaugural Committee

Pennsylvania Deputy Political Director | Tom Wolf for Governor - Philadelphia, PA 05/2013 - 11/2014

- Responsible for building and maintaining relationships with local elected officials, labor leaders, and party officials across Pennsylvania
- Secured political, labor, and grassroots organization endorsements
- Regularly engaged faith-based and grassroots organizations
- Established statewide African-American and Latino outreach programs
- Briefed, prepared, and staffed candidate for events and meetings
- Managed regional political and constituency outreach directors
- Managed statewide 'Women for Wolf' Committee

Regional Deputy Political Director | Pennsylvania Democratic Party - Obama For America - Philadelphia, PA 03/2012 - 11/2012

- OFA PA (Obama for America) Pennsylvania 2012 coordinated staffer; responsible for southeast PA - Philadelphia and surrounding suburban counties
- Built and maintained relationships with elected officials and community leaders
- Regularly attended local community and political organizational meetings and provided campaign updates
- Confirmed and prepared local and state elected officials for press conferences, media events, and public surrogate appearances

EDUCATION

Penn State University - Great Valley, Malvern, PA

No Degree: Business Administration

- Various courses completed in Accounting, Negotiations, Management & Decision-making, organizational behavior
- 30 credits completed

Temple University, Philadelphia, PA

08/2005

Bachelor of Arts: Psychology

Melissa A. Hoffer, Esq.

(b) (6)

LEGAL EXPERIENCE

MASSACHUSETTS ATTORNEY GENERAL'S OFFICE, Boston, MA

Chief, Energy & Environment Bureau, 2015-present

- Supervise work of approximately 50 Bureau attorneys and staff in Environmental Protection, Energy and Telecommunications, and Environmental Crimes Strike Force Divisions
- Develop policy recommendations and litigation and advocacy strategy
- Advise agency clients
- Direct and oversee investigations
- Lead litigation on range of matters, including defense of Mercury and Air Toxics Standards and suit against major fossil fuel company for investor and consumer climate deception
- Led team, with independent expert, to develop the Regional Electric Reliability Options Study, analyzing economics of ratepayer-backed gas pipeline construction in Massachusetts
- Testify on proposed federal and state legislation

Chief, Environmental Protection Division, Public Protection and Advocacy Bureau, November 2012-July 2015

- Oversee AGO civil enforcement of state environmental law
- Represent MA in federal litigation, including advocacy to advance regulation of greenhouse gases and air toxics
- Supervise division attorneys and staff
- Collaborate across divisions to organize AGO 2013 Energy Summit

CONSERVATION LAW FOUNDATION, New England (Boston-based)

Vice President and Director, Healthy Communities and Environmental Justice Program, Feb. 2007-September 2012

- Directed program work in five states; responsible for strategic planning, budget, attorney supervision
- Successfully secured multiple new streams of funding
- Launched CLF Sustainable Farm & Food System Initiative
- Played lead role in organizing and launching Transportation for Massachusetts (T4MA), a diverse coalition of over twenty organizations working to promote transportation alternatives, <http://www.t4ma.org/>
- Member, Metropolitan Area Planning Council HUD-funded Sustainable Cities Consortium
- Member, Board of Directors, Massachusetts Smart Growth Alliance
- Contributed legal and policy research, data analysis, and reporting on food policy (Growing Green: Measuring Benefits, Overcoming Barriers, and Nurturing Opportunities for Urban Agriculture in Boston (2012) and transportation (Maxed Out: Massachusetts Transportation at a Financing Crossroad (2011))
- Participated in federal court litigation challenging coal-fired power plant Clean Air Act violations
- Led team developing comments on complex federal water permit for coal-fired power plant

Vice President and Director, New Hampshire Advocacy Center, February 2007-March 2010

- Directed NH Advocacy Center, including budget oversight and fundraising; coordinated closely with CLF NH Advisory Board and updated Board governance structures; supervised attorneys and staff
- Identified advocacy goals and devised legal, public relations, and legislative strategies to implement
- Represented CLF as intervenor in federal litigation successfully defending Vermont's and Rhode Island's Clean Air Act authority to adopt California's clean cars regulations limiting greenhouse gas emissions; partnered with several MA NGOs and environmental justice advocates to collaboratively develop and implement advocacy to improve water quality in the Mystic River watershed; represented CLF in adjudicatory proceeding challenging air permits issued to coal-fired power plant

WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA

Junior Partner, Environmental Department, June 2003-January 2007

- Represented clients in litigation and enforcement matters relating to cost recovery under Massachusetts and federal Superfund laws, corporate successor liability, NEPA, insurance cost recovery, zoning, Clean Water Act, Residential Lead-Based Paint Hazard Reduction Act, and hazardous waste laws

Melissa A. Hoffer, Esq.

- Provided permitting and compliance advice under the Clean Water Act, Toxic Substances Control Act, state clean water, wetlands, and hazardous and solid waste disposal laws, and *pro bono* advice related to mechanisms for establishing a carbon sequestration project in South America
- Supervised all levels of associates, paralegals, and staff
- Represented, *pro bono*, six detainees interned at Guantanamo Bay Naval Base seeking writs of *habeas corpus* (*Boumediene v. Bush*)

Associate, October 1999-May 2003

- Member, Environmental Department (2001-2003), Litigation Department (1999-2001)
- Summer Associate*, May 1997-August 1997

HONORABLE MAGISTRATE JUDGE JOYCE LONDON ALEXANDER, *Boston Federal Dist. Ct., Boston, MA*
Law Clerk, August 1998-August 1999

- Drafted opinions and bench memoranda on civil litigation and criminal prosecution matters including patent, trademark, Endangered Species Act, First Amendment, tort, and contract disputes
- Assisted with research and drafting of article published in 1999 Suffolk Law Review

EMC CORPORATION, *Hopkinton, MA*
Legal Intern, March 1998-May 1998

HONORABLE JUDGE BRUCE M. SELYA, *First Circuit Court of Appeals, Providence, RI*
Legal Intern, March 1997-May 1997

PETRUCELLY & NADLER, P.C., *Boston, MA*
Legal Intern, September 1996-November 1996

BAR ADMISSIONS

- Supreme Judicial Court of Massachusetts, 1998
- New Hampshire Supreme Court, 2008
- United States Supreme Court, 2014
- United States Court of Appeals for the First Circuit, 1999
- United States Court of Appeals for the District of Columbia, 2013
- United States District Court for the District of Massachusetts, 1999
- United States District Court for the District of New Hampshire, 2011

HONORS AND AWARDS

- Inducted as Fellow, American College of Environmental Lawyers, 2020
- National Association of Attorneys General, Meritorious Service Award, 2020
- Recipient, Top Women of Law Award, Massachusetts Lawyers Weekly, 2013
- Recipient, as member of WilmerHale *Boumediene v. Bush* pro bono legal team, of an American Constitution Society public service award, 2010
- Named “New England Super Lawyers Rising Star,” Boston Magazine, 2008
- Recipient, Boston Bar Association President’s Award, May 2007
- Named “Massachusetts Super Lawyers Rising Star,” Boston Magazine, 2006
- Winner, 3rd Place, human rights speech competition, 17th International Concours de Plaidoiries Pour les Droits de l’Homme, Caen, France, 2006
- Recipient, Recognition for “Outstanding Pro Bono Service,” WilmerHale, July 2006

PROFESSIONAL ASSOCIATIONS

- Member, Boston Bar Association, 1999-2008; 2013-present

Melissa A. Hoffer, Esq.

ACADEMIC EXPERIENCE

HAMPSHIRE COLLEGE, Amherst, MA

Visiting Assistant Professor of Environmental Law and Human Rights, August 2013-June 2014

SPEAKING APPEARANCES

- New England Power Generators Association, New England Energy Summit, panelist, *State Decarbonization Opportunities*, November 23, 2020
- MA AGO, *Forest Carbon Forum*, organizer and moderator, September 15, 2020
- Boston Bar Association Energy Conference, *State of the Sectors Regulatory Update*, panelist, July 15, 2020
- Environmental League of MA, *Challenging Environmental Rollbacks*, discussion with AG Healey, May 13, 2020
- American Bar Association 48th Spring Conference, Section of Environment, Energy, and Resources, panelist, *East Meets West in the Air Quality Arena: Ozone Attainment, Regional Haze, Electric Vehicles and More*, March 29, 2019
- League of Women Voters of the Worcester Area, keynote, Cleaner Greener Environmental Forum, March 27, 2019
- Cornell Law School, Berger Current Events Colloquium, panelist, Climate Change Symposium, October 24, 2018
- Environmental Law Institute 2018 Corporate Forum, panelist, *Corporate Governance in an Age of Increased Environmental Accountability, Liability and Risk*, October 23, 2018
- Clark University, keynote conversation with Reverend Mariama White-Hammond, *All Together Now: Politics, Economy, Social Justice and the Climate*, September 29, 2018
- Northeast Energy and Commerce Association Environmental Conference, panelist, *One Year In—Environmental Perspectives on the Trump Administration*, April 12, 2018
- Guest Lecture, Suffolk Law School, Environmental Law Survey Class, October 18, 2017
- Boston Bar Association, *One Year Into the Trump Administration: An Update on Changes in Federal Environmental Law and Regulation*, October 12, 2017
- Hampshire College, panelist, *Climate Justice Solutions in an Era of Deregulation*, June 3, 2017
- MCLE New England, 18th Annual Environmental, Land Use & Energy Law Conference 2017, AGO Enforcement, February 2, 2017
- Cape & Islands Self-Reliance, Big Choices Forum, March 24, 2016
- MCLE New England, 17th Annual Environmental, Land Use & Energy Law Conference 2016, AGO Enforcement, February 4, 2016
- Boston Bar Association, *The Massachusetts Attorney General's Environmental and Energy Priorities*, November 19, 2015
- Massachusetts Interfaith Coalition on Climate Action, Energy Briefing, December 14, 2015
- Boston Bar Association, *Federal Court Cases at the Nexus of Climate and Energy: A Summer Roundup and Look Ahead*, September 22, 2014
- Lester J. Mazor Memorial Lecture, Hampshire College, *Secrecy and Surveillance in the Global War on Terror*, April 23, 2014
- MCLE New England, 15th Annual Environmental, Land Use & Energy Law Conference 2014, AGO Enforcement, January 30, 2014
- Suffolk University Law School, Guest Lecture, International Environmental Law, February 25 and October 21, 2014
- MCLE New England, 14th Annual Environmental, Land Use & Energy Law Conference 2013, AGO Enforcement, January 24, 2013
- Q1 Productions, Corporate Integration of Renewable Energy, *Cap and Trade: The Wild Card in Fossil Fuel Economics*, February 2, 2010
- State Transportation Reform Conference, NYU, *New England Transportation Reform Successes*, February 1, 2010

Melissa A. Hoffer, Esq.

- Sierra Club Beyond Coal Conference, *Merrimack Station, New Hampshire: Making the Economic and Environmental Case for Phase Out*, October 2009
- Law Seminars Int'l, *Paradigm Shift: Rethinking Transportation and Land Use for Healthy Communities and Climate Protection*, January 12, 2009
- Invited speaker on Guantanamo detainee litigation, Boston Bar Association, Boston University School of Law, Northeastern University School of Law, Harvard Law School, Suffolk University Law School, 2005 – 2006
- Invited televised appearance, NewsNight with Jim Braude, New England Cable News, on Supreme Ct. *Hamdan* decision, July 3, 2006
- Boston Museum of Science Nanotech Forum, September 25, 2006
- NanoBusiness Alliance Spring 2006 Conference, *In Re International Nanotech Regulation: A Mock NEPA Hearing Exploring the Critical EHS Implications of Nanotechnology*, May 18, 2006
- Center for High-Rate Nanomanufacturing and the Toxics Use Reduction Institute's Nanoparticle Occupational Health and Safety Workshop, "Brave New World: What You Need to Know About Nanotechnology and Environmental Regulation," December 2, 2005
- Materials Research Society Fall 2005 Conference, Session Chair, Symposium S8: Policy and Legal Approaches for Nanotechnology; Speaker, Symposium S9: "Common Sense Strategies in the Face of Regulatory and Scientific Uncertainty," December 1, 2005
- 3rd New England International Nanomanufacturing Workshop, "New or SNU, the Reach of REACH, and the Role of Standards Development in Regulation: 5 Points You Should Know About Nanotechnology and Environmental Regulation," Northeastern University, June 2005
- Panelist at American Constitution Society program, *Writs, Rights, and the Rule of Law: What Guantanamo Means for All of Us*, November 10, 2004, hosted by Suffolk University
- Panelist at Suffolk University School of Law Center for Advanced Legal Studies Seminar, *What You Need To Know About Nanotechnology*, on topic of environmental regulatory concerns related to nanomaterials, October 1, 2004
- Invited speaker at the New England Section of the Air and Waste Management Association's Fall 2002 Conference on the topic of the Environmental Protection Agency's newly implemented Data Quality Guidelines

PUBLICATIONS

- *The New Progressive Federalism: States' Rights to Clean Air and Climate Protection*, American Bar Association, Section of Environment, Energy and Resources, Trends, September 1, 2019
- *Closing the Door on Private Enforcement of Title VI and EPA's Discriminatory Effects Regulations: Strategies for Environmental Justice Stakeholders After Sandoval and Gonzaga*, New England Law Review, Volume 38, Issue 4 (2004)
- *Climate Change: Coming Soon To A Theater Near You*, New England's Environment, with Ken Meade, Esq., May/June 2004

EDUCATION

TUFTS UNIVERSITY GRADUATE AND PROFESSIONAL STUDIES, Env'tl. Mngmt. Certificate, May 2004
Medford, MA

- Courses included Wetlands Management; Hazardous Waste Treatment Technologies; Epidemiology; Environment, Development and Security in Int'l Politics; and Methods in Environmental Impact Assessment

NORTHEASTERN UNIVERSITY SCHOOL OF LAW, J.D., May 1998
Boston, MA

- Head Teaching Assistant for Legal Practice course 1997-98
- Legal Practice Teaching Assistant 1996-97
- Independent research on protecting indigenous intellectual property rights in plant genetic resources
- Drafted guide to environmental laws affecting water quality of Muddy River for Restore Olmsted's Waterway

HARVARD EXTENSION SCHOOL, Independent Course Work, spring 1996
Cambridge, MA

- Quantitative Reasoning

Melissa A. Hoffer, Esq.

UNIVERSITY OF MASSACHUSETTS, M. Ed., February 1991

Amherst, MA

- Secondary Level Social Studies Teaching Certification in Massachusetts

HAMPSHIRE COLLEGE, B.A., January 1987

Amherst, MA

- Division III Senior Thesis: Transforming the Concept of Education

PROFESSIONAL EXPERIENCE

WALDEN HOUSE, INC., *San Francisco, CA*

Co-Founder and Director, Project Sister Kin, August 1993-August 1995

- Co-designed and established a unique residential comprehensive care program for high-risk young women utilizing innovative gender specific methodologies for the treatment of dual-diagnosed adolescent females
- Managed daily functioning of all aspects of program and public relations; supervised all program staff

Multiple Subject Teacher, Mixed 9th-12th Grade, April 1991-August 1993

- Responsible for skills assessment, Independent Education Plan (IEP) formation, and curriculum development

HOLYOKE HIGH SCHOOL, *Holyoke, MA*

Social Studies Teacher Intern, 12th Grade, September-December 1990

- Developed and taught course entitled “American Democracy: Meeting the Environmental Challenge”

SCHUYLKILL CENTER FOR ENVIRONMENTAL EDUCATION, *Philadelphia, PA*

Environmental Education Teacher Intern, K-12th Grade, February-June 1990

COMMUNITY ACTIVITIES

- Member, Core Team, Council on the Uncertain Human Future, Clark University, 2018-present
- Member, Board of Directors, The Food Project, 2012-2014
- Member, Board of Directors, Boston Natural Areas Network, 2003-2007
- Town of Concord, MA Sustainable Energy Planning Committee, 2006
- Judge, first-year Legal Practice oral arguments, Northeastern University School of Law, 2002-2007
- Volunteer vernal pool identification, Great Meadows National Wildlife Refuge, 2001-2002
- Volunteer water quality monitor, Alewife/Mystic River Advocates, 1999-2001
- Volunteer sea turtle nest monitor for Caribbean Conservation Corporation, Tortuguero, Costa Rica, Sept.1999

References available upon request.

EXPERIENCE

Office of Governor Jay Inslee
Washington, D.C.

Director of Federal and Inter-State Affairs, Feb. 2018 – Present
Deputy Director of Federal and Inter-State Affairs, Oct. 2017 – Jan. 2018

- Serve as principal federal policy advisor to Governor Inslee and direct Washington State's engagement with Congress, the White House, federal agencies and other states.
- Develop and execute the Governor's and state agencies' federal policy agenda on a broad range of issues including health care, climate, immigration, education, infrastructure, human services and international trade.
- Oversee all federal aspects of the state's COVID-19 pandemic response including Strategic National Stockpile distributions, testing supplies, FEMA reimbursement, CARES Act implementation, CDC guidelines and National Guard deployment. Serve as primary liaison to the White House Coronavirus Task Force.
- Build coalitions and formulate strategies to oppose Trump administration actions such as regulatory rollbacks to the Clean Water Act, vehicle emissions standards, DACA protections and reproductive health care access.
- Coordinate with state's Attorney General on legal strategies to protect Washington State's interests.
- Direct all state agencies' engagement with the federal government and 12-member congressional delegation, including policy and program implementation and federal support for major disasters.
- Represent the Governor in the National Governors Association, Western Governors Association, U.S. Climate Alliance, Governors' Partnership for K-12 Computer Science and other inter-state coalitions.
- Staff the Governor during visits to Washington, D.C., and at events with federal officials and fellow governors.
- Act as a spokesperson with national media; draft statements, press releases and talking points.
- Manage budget and personnel of the Governor's Washington, D.C. office, including hiring and supervising the Deputy Director, Special Assistant and interns.

U.S. Rep. Suzan DelBene
Washington, D.C.

Senior Legislative Assistant, Apr. 2016 – Oct. 2017
Legislative Assistant, Nov. 2012 – Apr. 2016

- Served as principal advisor for a diverse policy portfolio including health care, education, military, labor, housing, women's issues, retirement security, civil rights, arts and humanities, science and disabilities.
- Managed legislative hearings and markups for the House Ways and Means Committee on health care, retirement and human services issues, including 18-hour markup on Republicans' health care repeal bill.
- Wrote and successfully passed into law legislation to expand National Guard health coverage, protect American manufacturing jobs, reduce criminalization of opioid use, and stabilize military families during relocation.
- Coordinated introduction of dozens of bills and amendments, including drafting legislative text, soliciting feedback from stakeholders and federal agencies, developing media strategy and recruiting cosponsors.
- Drafted floor speeches, testimony, talking points, letters to federal agencies, op-eds and constituent mail.
- Organized bipartisan sign-on letters and recruited hundreds of House signers in support of medical research, transgender student protections, computer science education and military health coverage.

Jay Inslee for Washington
Seattle, Washington

Director of Operations, Feb. 2012 – Nov. 2012

- Oversaw operations for a winning gubernatorial campaign, coordinating all state and national travel, fielding scheduling requests, handling logistics and resolving conflicts.
- Implemented the campaign's strategic scheduling objectives to meet political goals and geographic targets.
- Coordinated mock debates, organized consultant calls and liaised with key state leaders.
- Supervised more than a dozen volunteers and interns.

U.S. Rep. Jay Inslee
Washington, D.C.

Executive Assistant & Office Manager, Aug. 2011 – Feb. 2012
Scheduler, Jul. 2010 – Jul. 2011

Human Rights Campaign
Washington, D.C.

Communications Intern, Jan. 2009 – May 2009

EDUCATION

Vassar College, B.A., Political Science, with honors

2006 – 2010

Eunjung Kim

(b) (6)
(b) (6)

Work Experience

DATA ASSOCIATE

Dec 2020 – Jan 2021

Georgia Senate Runoff Coordinated Campaign

- Flipped the U.S. Senate by winning 2 races and turning out 4.5 millions voters in Georgia for the runoff elections
- Constructed Direct Voter Contact lists for voter outreach on tools such as ThruText, HubDialer, VAN Open Virtual Phonebank for 1 million+ Georgia voters daily, including tailored lists for AAPI, Latinx, AfAm constituency groups
- Built reports that track user activity for voter apps such as Outvote and IWillVote.com to maximize outreach

DEPUTY DATA DIRECTOR

Sep 2020 – Nov 2020

Joe Biden for President – Nevada

- Created trackers and comprehensive progress to goal reports that tracked 9,300+ volunteers and 39,000+ shifts to support the Field Organizing, Voter Protection, GOTV teams on Google Sheets and Data Studio
- Curated targeted universes for direct voter contact via phone calls, text messages, and canvassing for Nevada's 3M+ population using SQL from CIVIS and BigQuery
- Determined resource allocation by turfing and designating 28 regional teams throughout the state via Tableau
- Generated daily reports to statewide leadership and elected officials on volunteer outputs and paid canvassing
- Constructed statewide Get Out The Vote reports that accounted for volunteer outputs at 20 Virtual Staging Locations and 5 Voter Activation Centers that Biden for President HQ monitored
- Set up the rejected ballots and provisional ballots cure operation by compiling county level data and constructing phonebank, texting, and canvassing lists for ballot chase to cure 1,700+ ballots
- Managed 1 data associate and 4 full-time volunteers for database management and canvassing program

ORGANIZER

Jun 2020 – Aug 2020

Amy McGrath for U.S. Senate – Kentucky

- Flipped KY 26th Senate District by recruiting volunteers for outreach by executing a virtual Get Out the Vote weekend
- Recruited and trained 200+ direct voter contact volunteer shifts by conducting 4,000+ volunteer recruitment calls

ORGANIZER

Dec 2019 – Mar 2020

Elizabeth Warren for President – Winneshiek County, Iowa & Minneapolis, Minnesota

- Organized in rural Northeast Iowa and greater Twin Cities area and won 8 delegates in IA and 10 delegates in MN
- Recruited 105+ volunteers and organized in rural areas of Iowa and Minneapolis for a progressive candidate
- Coordinated and trained 15 volunteers as Staging Location Leadership for Get Out the Caucus weekends in Iowa
- Launched events with surrogates including Rep. Katie Porter and Deb Haaland for 30+ in attendance

MATERIALS ENGINEER

Oct 2014 – Dec 2019

United States Army Corps of Engineers ERDC-CERL - Champaign, Illinois

- Obtained U.S. Department of Defense issued Secret Level security clearance
- Managed dynamic projects in hazmat detection, PFOA remediation, explosives neutralization as primary investigator
- Awarded \$10M+ in funding for research projects from the US Army through presentations and written proposals
- Developed experiments for material synthesis including polymer coatings, materials corrosion, and nanoparticles
- Collaborated with professors at research universities and military research scientists for innovative project execution
- Mentored undergraduate and high school interns in an R&D setting through involvement in USACE projects
- Completed Primary Investigator/Project Management and Leadership Development Program training assignments from the US Army Engineering Research and Development Center

Skills

Materials Characterization Techniques

Transmission Electron Microscopy, Scanning Electron Microscopy, Energy-Dispersive X-ray Spectroscopy, Atomic Force Microscopy, 3D Profilometer Microscopy, Fluorescence Microscopy, Confocal Microscopy, X-ray Diffraction, Dynamic Light Scattering, Fluorescence Spectroscopy, Fourier-Transform Infrared Spectroscopy, Spectroscopic Ellipsometry

Computer Programs

Google Sheets, Google Data Studio, SQL, Tableau, BigQuery, CIVIS, MatLab, Origin, ImageJ, Canva, Adobe (Photoshop, Lightroom), Microsoft Office Suite, Google Apps, Votebuilder, Reach, ThruText, ThruTalk, Spoke, Slack, Zoo

Education

B.S. in Materials Science and Engineering – University of Illinois at Urbana Champaign

2011 – 2015

- Primary Concentration: Polymers, Secondary Concentration: Metals
 - Alpha Omega Epsilon Engineering Sorority

Kathleen Claire Lance

(b) (6)

EXPERIENCE

N.C. Department of Environmental Quality-Raleigh, NC

2012-Present

Special Assistant to Secretary, Office of the Secretary (2018-Present)

- Manage all executive level support for the Secretary of the N.C. Department of Environmental Quality, and the administrative support for the Senior Executives within the Secretary's Suite who collectively oversee approximately two billion dollars in assets, 1,600 employees and seven regional offices across the State of North Carolina.
- Manage the structure of the Secretary's daily calendar, serving as the team lead for the Secretary's scheduler, communications/advance staff and associated administrative staff to effectively execute meetings, travel, events and associated logistics.
- Manage the daily briefing book for the Secretary.
- Provide budget oversight to Secretary's Office travel expenses and purchasing based on state policies and procedures.
- Serve as the primary liaison for meetings and logistics with the Governor's office, cabinet agencies and corporate executives.
- Serve as the Secretary's travel aide, managing the Secretary's 100 County N.C. Strategy.
- Coordinate a range of special projects engaging with executive-level business leaders and elected officials.
- Provide the senior leadership team and the Secretary with advice and counsel for implementation of post-meeting assignments and projects.

Executive Assistant to Secretary, Office of the Secretary (2017-2018)

- Identified process improvement opportunities and worked with senior management to implement changes promoting organizational efficiency and cost-effective savings of department resources.
- Provided executive support to the Secretary ensuring timeliness and accountability of scheduling and logistics.
- Managed assignments within the Office of the Secretary to ensure effective day-to-day operations.
- Provided backup executive support to Chief Deputy Secretary, Assistant Secretary for the Environment, Communications Director, Legislative Director and Senior Advisor for Policy and Innovation.

Administrative Secretary to the Director, Division of Waste Management (2013-2017)

- Led administrative support to the division director, deputy division director, budget officer, human resources manager and public information officer.
- Liaised between the division and the department regarding policy and procedural updates for travel, purchasing, IT and regional offices.
- Planned meetings and trainings with stakeholders in the public, private and federal sectors.
- Coordinated special projects with financial, HR, IT and legislative offices.
- Ensured cash management activity was handled per the established cash management guidelines.

Temporary Office Assistant to Section Chief, Division of Waste Management (2012-2013)

- Provided administrative support to section chief, three branch heads, and central office staff.
- Coordinated special projects, displays, training and informational materials for the section.
- Conducted annual fixed asset inventory for section items statewide.

Arc of Hunterdon County-Annandale, NJ

2008-2012

Interim Vocational Coordinator, Employment Solutions (2012)

- Supervised two Employment Specialists.
- Organized all competitive employment opportunities for clients.
- Facilitated communication between employers, vendors, clients, state agencies, school systems and families.
- Appraised performance, fielded complaints and provided problem resolution.
- Managed confidential client information.

Employment Specialist, Employment Solutions (2008-2012)

- Assisted clients achieve personal and vocational goals through job placement.
- Coached interview skills, professional attire and appropriate workplace demeanor.

- Exemplified a professional, knowledgeable image for the organization.

EDUCATION

Elon University-Elon, NC

Bachelor of Arts, Political Science; Minor, Anthropology

Elon University Poll, Model United Nations, N.C. Student Government

2008

Experience

Biden for President

June 2020 – January 2021

Email Fundraising Strategist

Remote from Washington, DC

- Drafted 100+ fundraising emails as part of the team that raised more online than any campaign in history
- Wrote across a range of voices and objectives, including the campaign's single highest-raising email that raised nearly \$3 million alone, multiple others that raised over \$1 million each, several Build Back Better policy plank rollouts, and 16+ surrogates' voices including Stacey Abrams, Anna Wintour, Yo-Yo Ma, and Jill Biden
- Took over writing Joe Biden's biweekly newsletter, raising a combined \$1.04 million over 5 newsletters
- Coded email HTML daily and developed code documentation to improve the team's onboarding process
- Migrated part of the email list into Action Network and trained others on how to use it
- Fundraised post-election for the transition and the Presidential Inaugural Committee, and helped raise over \$10 million for Jon Ossoff, Raphael Warnock, and the DNC

Warren for President

January – March 2020

Digital Fundraising Associate

Boston, MA

- Pitched, wrote, and built multiple fundraising emails daily for a program that raised nearly \$36 million in grassroots donations, including \$11 million from more than 425,000 donations in 2020
- Drafted rapid-response emails at all hours to capitalize on high-stakes fundraising moments
- Strategized and tested specific messaging for existing donors, a key fundraising audience
- Working with senior fundraising staff, developed and implemented an upsell program for donors who had already made significant contributions that raised more than \$650,000 in 17 days

Democracy Forward

May 2018 – January 2020

Digital Communications Manager

Washington, DC

- Built out digital program as the organization's first person to hold this role one year after its founding
- Managed social media accounts, an email program, and the organization's website, taking 100+ lawsuits and other legal actions to challenge the Trump administration's unlawful acts and distilling them into digestible content
- Launched and wrote the *Behind the Scenes* newsletter, information from which has since been cited in a Congressional oversight letter
- Oversaw website redesign that better communicated Democracy Forward's mission and work
- Created and maintained the Communications team's style guide
- Organically increased Twitter followers by 50% and more than doubled Facebook followers

Blueprint Interactive

June 2017 – May 2018

Digital Campaigns Associate

Washington, DC

- Created and optimized paid digital persuasion, Get Out the Vote, and list acquisition campaigns for statewide, Congressional, and local campaigns
- Managed projects involving designers, engineers, and client approvers to design, create, and launch each ad campaign or website asset on strict, short deadlines
- Implemented a digital campaign that generated at least 8,000 calls to senators in key states for an advocacy group focused on defending the Affordable Care Act from June to September 2017
- Wrote design briefs and launched over a dozen candidate landing pages and full websites, and then trained campaign staff on how to take over and manage their websites after launch

Pennsylvania Democratic Party, 2016 Coordinated Campaign

August – November 2016

Campus Organizer

Philadelphia, PA

- Managed a team of 18 Campus Fellows, 200+ volunteers, and other student leaders

Max Levy

(b) (6)

- Increased voter turnout on campus by over 20% compared to the 2012 election

Democratic National Convention Committee, Office of Public Engagement

June – August 2016

Intern to the Deputy CEO

Philadelphia, PA

- Assisted the Deputy CEO with memo drafting and managing external relationship
- Tracked and coordinated daily credential allocations for allied groups and other organizations

Philadelphia 2016 Host Committee for the Convention, Volunteer Department

February – May 2016

Community Outreach Intern

Philadelphia, PA

- Worked with the Volunteer Director to plan volunteer recruitment, training, and deployment
- Tracked progress to volunteer recruitment goals and developed a tracker that used ZIP code data to measure success of outreach efforts in specific Philadelphia neighborhoods
- Drafted volunteer recruitment emails and created digital guides for registering as a volunteer

The White House, Office of Public Engagement

May – August 2015

Intern for Progressive, Labor, and Aging American Engagement

Washington, DC

- Played major logistics role for the weekly Big Table meeting for progressive groups, the White House Conference on Aging, and the White House Summit on Worker Voice, in addition to other events
- Assisted drafting memos and other documents for the President and senior staff, staff, including a memo for a call to 8,000+ Americans discussing the Iran nuclear deal and a report about organizations statements on Congressional appropriations

Annenberg Public Policy Center

December 2014 – May 2015

Research Assistant

Philadelphia, PA

- Developed a framework and analyzed political blogs for a study of online incivility

Penn Campus Health Services

September 2014 – December 2014

Graphic Design Assistant

Philadelphia, PA

- Created digital and print content with Photoshop and Illustrator and drafted monthly analytics reports

Center for American Progress, Generation Progress

June – August 2014

Digital Communications Intern

Washington, DC

- Created and published 15+ graphics shared on Facebook, Twitter, and in print, and published a BuzzFeed community article on refinancing student debt

Education

University of Pennsylvania, Communication and Public Service major, *summa cum laude*

May 2017

Skills

BSD Tools and Action Network CRMs; HTML; ad platforms on Facebook, Twitter, Google, The Trade Desk, and YouTube; Google Analytics; Adobe InDesign, Photoshop, and Illustrator; WordPress; Drupal; Microsoft Office; Google Docs and other Google tools

EXPERIENCE

Environmental Policy Innovation Center, Washington, D.C.

Director for Biodiversity

May 2018 – Present

- I built and oversee the wildlife conservation program at the Innovation Center, with a focus on developing pragmatic, innovative approaches to improve endangered species policy. This work includes regulatory, legislative, and on-the-ground projects with a variety of partners. Examples include developing the nationwide monarch butterfly conservation agreement, creating a new method to measure species recovery progress, and helping the electric power sector identify opportunities for voluntary species conservation.
- One area of focus is improving the process for evaluating and regulating pesticides under the Endangered Species Act (ESA). This work includes:
 - Collaborating with pesticide registrants to develop and test species-specific mitigation measures.
 - Working with the U.S. Fish and Wildlife Service on a mitigation framework for pesticide consultations.
 - Helping to develop a tool to inform the selection of mitigation measures for species based on their level of vulnerability to particular classes of pesticides.
 - Obtaining and presenting novel pesticide usage data as part of a section 7 consultation on an insecticide.
 - Facilitating the creation and use of refined species range maps for pesticide consultations.
 - Working with conservation and agricultural groups on concepts that led to Section 10115 of the 2018 Farm Bill (FIFRA Interagency Working Group) and on implementation of the section.

Defenders of Wildlife, Washington, D.C.

Various positions (see below)

Aug. 2010 – May 2018

- I oversaw Defenders' endangered species policy program, which focused on improving the ESA's effectiveness. This work covered nearly every aspect of the ESA, especially species recovery planning, permitting, and listing/delisting. I also worked closely with Defenders' other departments on legal, legislative, policy, and science issues pertaining to federally protected species. I directly supervised eight scientists, all of whom I hired, along with over 12 interns. My other responsibilities included fundraising, organizational strategic planning, lobbying, and working with journalists.
- In 2018, I created and directed the Center for Conservation Innovation, which uses data and technology to improve wildlife conservation. In this capacity, I also oversaw Defenders' science and GIS programs.

Director, Center for Conservation Innovation

Feb. 2018 – May 2018

Vice President of Endangered Species Conservation

Sept. 2016 – Feb. 2018

Various director, advisor, and analyst positions

Aug. 2010 – Aug. 2016

Latham & Watkins, Washington, D.C.

Attorney

Aug. 2007 – Aug. 2010

- I helped corporate clients secure federal and state environmental permits and authorizations for a wide variety of activities. Pertinent laws include the National Environmental Policy Act; National Forest Management Act; Administrative Procedure Act; Clean Water Act; Clean Air Act; Mineral Leasing Act; Federal Insecticide, Fungicide, and Rodenticide Act; and Toxic Substances Control Act.
- I advised clients on various Endangered Species Act issues, including section 7 consultations, Part 402 Interagency Cooperation rules, and interpretation of the "best available data" standard.

SELECT PUBLICATIONS

Endangered Species Act: Law, Policy, and Perspectives (Third Edition), American Bar Association (forthcoming 2021) (coeditor of book, with D. Baur).

Species Protection Will Take More Than Rule Reversal, Science (2020) (with J. Roman, D. Wilcove, T. Male, & H. Doremus).

When Does Critical Habitat Designation Benefit Species Recovery?, Utah State University, The Center for Growth and Opportunity Policy Paper (2020).

How to Make Voluntary Species Conservation Work for Pesticide Registrations, Environmental Assessment and Management (2020) (with R. Brain, Y. Li, T. Burd, R. Wolf, P. Buttner, & T. Cooke).

Improving Cooperative State and Federal Species Conservation Efforts, Wyoming Law Review (2020) (with T. Stoellinger, M. Brennan, S. Brodnax, M. Feldman, & B. Budd).

Recovery Plans Need Better Science to Support Decisions That Allow Species to Decline in Abundance but Be Recovered, bioRxiv (2020) (with J. Malcom, J. Che-Castaldo, & M. Neel).

Recovery Units Under the Endangered Species Act Could Be Used More Widely, bioRxiv (2020) (with M. Evans & J. Malcom).

Same Law, Diverging Practice: Comparative Analysis of Endangered Species Act Consultations by Two Federal Agencies, PLOS ONE (2020) (with M. Evansen & J. Malcom).

2019 Endangered Species Act Regulatory Revisions, The Environmental Law Reporter (2019) (with P. Romanik, G. Sheehan, R. McGee, A. Seidman, & J. Wood).

Novel Data Show Expert Wildlife Agencies are Important to Endangered Species Protection, Nature Communications (2019) (with M. Evans & J. Malcom).

Missing, Delayed, and Old: The Status of ESA Recovery Plans, Conservation Letters (2018) (with J. Malcom).

Free Aerial Imagery as a Resource to Monitor Compliance with the Endangered Species Act, bioRxiv (2017) (with J. Malcom & T. Kim).

Invigorating a Neglected Tool for Endangered Species Recovery, American Bar Association, Endangered Species Committee Newsletter (2017).

A Simple, Sufficient, and Consistent Method to Score the Status of Threats and Demography of Imperiled Species, PeerJ (2016) (with J. Malcom & W. Webber).

Species Recovery in the United States: Increasing the Effectiveness of the Endangered Species Act, Issues in Ecology (2016) (with D. Evans and 17 other scientists).

Data Contradict Common Perceptions About a Controversial Provision of the US Endangered Species Act, Proceedings of the National Academy of Sciences (2015) (with J. Malcom).

Risk Management Decisions for Pesticides and Threatened and Endangered Species: The Role of Uncertainty Analysis, Human and Ecological Risk Assessment: An International Journal (2015) (with A. Fairbrother, B. Hartl, B. Hope, J. Jenkins & D. Moore).

Creating Pre-listing Conservation Projects Under the Endangered Species Act: Law and Policy Issues, in Proactive Strategies for Protecting Species: Pre-Listing Conservation and the Endangered Species Act (J. Donlan, ed., 2015) (with T. Male).

Improving the Endangered Species Act Pesticide Consultation Process, in Pesticide Regulation and the Endangered Species Act (2012) (with K. Racke, B. McGaughey, J. Cowles, A. Hall, S. Jackson, & J. Jenkins).

EDUCATION

Cornell University Law School, J.D., *cum laude*, 2007

- Also completed non-law school graduate courses in conservation biology and herpetology

Drexel University, B.S. in mechanical engineering, *summa cum laude*, 2003

The Bronx High School of Science, 1999

ADDITIONAL INFORMATION

Legal bar admissions: District of Columbia Bar (active), New York State Bar (inactive)

Languages: Fluent in Chinese (Mandarin – verbal)

Volunteer positions: PhD committee member, Olivia Davis, Arizona State University (began in 2020)
 Leadership planning committee, Southeast Plant Conservation Alliance (began in 2020)
 Mentor and organizer, EENR Law Fellows Mentorship Program (2019 – present)
 Zookeeper aide, Smithsonian National Zoo, Reptile Discovery Center (2010-11)

John D. Lucey

(b)

Education

Campbell University Norman Adrian Wiggins School of Law; Raleigh, NC -- Juris Doctor

Present

North Carolina State University; Raleigh, NC --- Bachelor of Arts -- Political Science

2015

Central Piedmont Community College; Charlotte, NC -- Associate of Arts – Liberal Arts

2013

Experience

Chief Strategy Officer, North Carolina Department of Environmental Quality (DEQ); Raleigh, NC

August 2019 - Present

- Collaborate as a member of Senior Leadership Team with division directors and designees to analyze and problem-solve issues ranging from division sections to national.
- Manage the development of North Carolina's Clean Energy Plan stemming from Governor Cooper's Executive Order 80.
- Provide guidance to Department on navigation of significant State initiatives including the Duke Energy Coal Ash Settlement, North Carolina Environmental Justice and Equity Board, and Chemours Consent Order, having orders of effect on daily duties of hundreds of state regulatory employees as well as subsequent industry activities.
- Partner with the Secretary of DEQ to handle constituent outreach affairs for the Department with environmental, industry, governmental, academic, and other stakeholders.
- Outside organization partners include business CEO's and State Presidents, the Governor and Governor's inner-circle, legislative members and caucus leaders, State party officials, Presidents of State Environmental organizations, and department chairs in academia, as well as direct contact with state media members and attorneys representing clients in dealings with the Department.
- Act as liaison between DEQ and the Office of the Governor, partnering on legislative and communications strategy directly with Governor's Chief of Staff and providing direct briefings to the Governor on sensitive, controversial topics.
- Synthesize and summarize pertinent information for the Secretary during regular, weekly meetings regarding implementation of new and ongoing initiatives in Department with an \$80 million recurring budget.
- Reviews and promotes outreach and collaboration on sensitive and controversial issues with external stakeholder and intergovernmental partners.
- Develop short and long-term plans pertaining to environmental issues, policies, and legislation and monitoring success throughout implementation of novel programs.

Legislative Affairs Director, North Carolina Department of Environmental Quality; Raleigh, NC **September 2018 - July 2019**

- Provided overall vision, strategy and leadership for state, local, and federal government engagement for the agency responsible for all environmental regulations for North Carolina.
- Managed complex policy and budget negotiations with environmental organizations, industry associations, legislators, government officials, corporate business leaders, academic leaders, and other stakeholders.
- Served as the Department's spokesperson at business engagements, environmental stakeholder groups, legislative committees, luncheons, and conferences.
- Formulated agency budget, objectives, and priorities and implemented plans consistent with the organization's long-term interests as part of the Senior Leadership team.
- Facilitated communication with internal and external stakeholders to keep them apprised of progress, generate credibility, and enthusiasm for agency goals and accomplishments.
- Worked with Governor's Office staff located in Washington D.C. to track federal legislation pertaining to DEQ. Facilitated dialogue with federal delegation for support on Department's initiatives. Set up and travelled with Secretary for meetings with North Carolina's federal delegation in both Senate and House offices of members.
- Managed one legislative analyst to ensure Department's reporting duties, bill tracking, and constituent concerns.
- Legislative outcomes:
 - o Increased net appropriations from \$75million to \$96million.
 - o Negotiated \$2million PFAs Recovery Fund for communities impacted by PFAs contamination
 - o Established a \$5million study in collaboration with UNC System to conduct PFAs sampling throughout the state
 - o Created an \$11.5million recovery fund for commercial fishermen impacted by Hurricane Florence
 - o \$4.6million invested in to Division of Water Infrastructure for low-interest loan matches in Clean Water and Drinking Water Revolving Funds

Digital Strategist, North Carolina Department of Environmental Quality; Raleigh, NC

January 2018 - August 2018

- Developed the social media strategy for the Secretary and agency.
- Created video and graphic content using Adobe Premiere and Illustrator
- Wrote, edited, and circulated press releases and media advisories to statewide media outlets on regulatory topics.
- Managed three interns and coordinated social media messaging with seven division public information officers.
- Travelled with Secretary and other Department staff throughout the staff. Coordinated on travel arrangements, event set up,

advance event, as well as staffing principal during the course of events. Staffing would include working with event staff and hosts as well as often interacting with local legislators, media, and business leaders.

Legislative Analyst, North Carolina Department of Environmental Quality; Raleigh, NC

May 2017 - December 2017

- Served as point person for Department's constituent services. Worked with staff at the North Carolina General Assembly and internal Department staff to research history of the constituent issue as well as possible solutions.
- Oversaw review of 73 annual legislative reports on topics related to all 10 of DEQ's Divisions. Ensured proper editorial review, compliance with statutory authority, and timely submission.
- Curated legislative agenda and priorities of the Department and researched both past and potential legislative provisions for recommendations for senior leadership. Prepared memos and briefs on meetings' subject matters

Compliance and Finance Associate, Cooper for NC; Raleigh, NC

June 2015 - April 2017

- Planned and executed 15 fundraising events throughout the campaign cycle as part of a team effort that raised over \$26M. Primary responsibilities included developing target lists, donor outreach, managing host, candidate call time preparation and follow up, pledge collection calls, advancing events, processing all \$26M in online and check contributions.
- Administered the daily tracking of the direct mail and online fundraising line items for finance plan to ensure accurate projections; direct mail program raised over \$375,000, online program raised over \$2.4M. Managed and trained one staffer and one intern to assist with check processing system.
- Worked on Gubernatorial Recount processes, specifically through the means of outreach to provisional voters and serving as an observer for the Durham Board of Election's physical hand recount.
- Gained valuable hiring experience during Cooper Transition efforts by developing application tracking system as well as making staffing placement recommendations to incoming Administration.

Finance Intern, Cooper for NC; Raleigh, NC

January 2015 - June 2015

- Contributed to donor outreach as well as built and maintained the donor database.
- Led production and distribution of mass mailings.

Intern, Trial Court Administrator's Office; Raleigh, NC

June 2014 - January 2015

- Developed courtroom calendar for both Superior and District Courts of Wake County.
- Attended a variety of court cases and discussed each cases intricacies with the presiding judge.

Intern, North Carolina Democratic Party; Raleigh, NC

June 2014 - August 2014

- Researched legislative agenda and prepared briefs, daily press clippings, media advisories, and press releases for Director.
- Became familiar with the state legislative process as well as state legislators.
- Prepared concise, daily press clippings for entire staff.
- Contacted hundreds of delegates in order to maintain relationship with state Democratic Party.
- Helped orchestrate state Party's largest fundraiser of the year with donor contacts and vendor coordination.

Fellow, Enroll America; Raleigh, NC

June, 2014 - August, 2014

- Developed relationships with local businesses and established partnerships to host events.
- Led outreach and registration for those eligible for insurance through canvassing and call banks.

Research Assistant, "Trail of History"; Charlotte, NC

January 2012 - August 2013

- Developed topics and found guests to interview for episodes in a local television broadcast program.
- Travelled to shoot sites and assisted with the filming and documentation, including work with producers and guests to set up shots as well as conduct interviews.

Activities

North Carolina State University Mock Trial Team; Raleigh, NC

August 2014 - May 2015

- Gained courtroom experience in a competitive environment while working with a team.
- Leadership role on the team, led meetings for the prosecution.

North Carolina State University Habitat for Humanity; Raleigh, NC

January 2014 - August 2014

- Helped lead group of 20 students to Louisiana and contributed to building two homes during the week of Spring Break.
- Assisted with fundraising efforts for group by reaching out to local businesses and student outreach.

Alpha Phi Omega; Raleigh, NC

August 2013 - May 2015

- Maintained active membership in a service fraternity dedicated to reaching out into the community with charitable endeavors.
- Served on Service Committee and worked with businesses to set up volunteer opportunities for fellow members.

Skills

VoteBuilder,, MyNGP Technologies, SAS Statistical Software, Microsoft Office, Adobe Creative Suite, Cision.

JENNIFER L. MACEDONIA

SUMMARY: Bridge builder and problem solver passionate about advancing solutions to the climate crisis and environmental injustice; Over 2 decades experience in environmental policy, analysis, and outreach driving progress on clean energy at state, national and international levels

Co-Lead, *POWER the VOTE* & Policy Co-Author, Clean Energy for Biden

08/2020–Present

Principal, JLM Environmental Consulting

2003–01/2017, 10/2017–Present

- Authored a blueprint for climate action at the U.S. EPA as part of the Climate 21 Project
- Advise clients on strategies & policies for power, transportation, land use, & industrial sectors
 - Analyze climate policy design, interactions, obstacles and implications
 - Advise states on clean energy policy, implementation, costs, and stakeholder outreach
 - Evaluate International Civil Aviation Organization's climate program
- Advise clients on aligning environmental justice imperatives with climate policy
- Moderate and present at numerous public and private events for a range of audiences
- Counseled U.S. EPA on impacts and interactions of energy and clean air legislation
- Served on Merit Review Board of U.S. DOE SunShot Initiative to advance solar innovation
- Executed partnership with defense firm to assess biofuel land use impacts with satellite imaging
- Media appearances: NPR, PRI, Politico, Bloomberg, Reuters, Scientific American, The Economist

Senior Advisor, Bipartisan Policy Center & National Commission on Energy Policy

2009–2016

- Fostered bipartisan support for energy efficiency and multi-state cooperation while guiding Clean Power Plan policy & analytic discussions for mid-continent states
- Spearheaded project to build diverse, multi-stakeholder consensus that environmental regulations for air, water, and waste would not compromise electric reliability
- Negotiated transportation recommendations with diverse members of the Strategic Energy Policy Initiative, including leaders of industry, academia, and environmental advocacy
- Directed analytical team, modeled environmental policy scenarios, and presented key insights
- Analyzed carbon pricing policies and refined legislative proposals

Senior Advisor/Team Leader/Engineer, USEPA, Office of Air and Radiation

1994–2002; 2017

- Planned initiatives on institutional investors, decarbonization, and electrification
- Served as trading expert on U.S. delegations to international climate negotiations for 4 years
 - Advanced EPA positions and environmental accountability in interagency working group
 - Composed rules to govern market-based mechanisms for UNFCCC submission by U.S.
 - Chaired informal negotiating sessions with foreign officials to advance consensus
- Managed team that provided training and support for foreign governments on emissions trading
- Led rulemakings and the policy team for the Acid Rain SO₂ Trading Program
- Chaired the State & Local Implementation and Industry Workgroups for the Acid Rain Program

Program Engineer, Engineering and Science Services, Inc.

1992–1994

- Developed technical documentation for NASA Global Geospace Science satellite missions

EDUCATION: Bachelor of Science, Mechanical Engineering, Villanova University, 1992

TRAINING: Climate Reality Leadership Corps Global Training, Climate Reality Project, 2020
Media Training for Spokespersons, Phillips Media Relations, 2016
Women in Politics Leadership Workshop, Council of State Governments, 2014
Negotiation, Mediation & Conflict Resolution; Environmental Technology, 1996, 1998

SELECT RESEARCH AND PUBLICATIONS

J. Macedonia, "Emissions Standards for New and In-Use Aircraft and Aircraft Engines," The Clean Economy Employment Now (CLEEN) Project, 2021.

M. Freeman, J. Macedonia, C. Lenox, "Expand Regulatory Pathways and Fund Research and Development for Next-Generation Zero-Emissions Aviation Technologies," The CLEEN Project, 2021.

B. Mallory, J. Goffman, and J. Macedonia, "Transition Memo: Environmental Protection Agency," The Climate 21 Project, Nicholas Institute for Environmental Policy Solutions, 2020.

V. Bugnion, D. Goldberg, M. Green, D. Grossman, J. Macedonia, D. Miller, C. Normile, N. Pavia, J. Tong, "Enforcing the 2050 Climate Goal: Carbon Pricing in Support of Community Investment," Clean Energy for Biden, *Building Back Better: Policy Recommendations for an Equitable Clean Energy-Powered Recovery and Achieving a 100% Carbon Neutral Economy by 2050*, p. 383, 2020.

C. Petsonk, J. Macedonia, C. Lenox, M. Freeman, N. Pavlenko, "A Flight Path to Carbon Neutral Aviation," Clean Energy for Biden, *Building Back Better: Policy Recommendations for an Equitable Clean Energy-Powered Recovery and Achieving a 100% Carbon Neutral Economy by 2050*, p. 217, 2020.

J. Macedonia, "Policies to Decarbonize Transportation: Implications of Carbon Pricing and Complementary Actions that Advance Technology in the Transportation Sector," Center for American Progress, 2017.

B. Beasley, D. Happock, J. Macedonia, M. Ross, and T. Terry, "A State Policymaker's Guide to Power Sector Modeling," Bipartisan Policy Center & Nicholas Institute for Environmental Policy Solutions, 2017.

S. Curwood (host) and J. Macedonia (guest), "Leasing U.S. Lands for Sunshine," *Living on Earth*, Public Radio International, November 2016.

J. Macedonia, B. Beasley, and E. Smith, "Modeling the Evolving Power Sector & Impacts of the Final Clean Power Plan," Bipartisan Policy Center, 2016.

F. Litz and J. Macedonia, "Choosing a Policy Pathway for State 111(d) Plans to Meet State Objectives," Great Plains Institute & Bipartisan Policy Center, 2015.

C. Munnings, A. Paul, J. Macedonia, D. Littell, T. Lawler, "Emissions Rate vs. Mass Goals in EPA's Clean Power Plan," Clean Power Plan Expert Forum, Resources for the Future, 2014.

- J. Macedonia and M. McGuinness, "Power Sector Transition: Greenhouse Gas Policy and Other Key Drivers," Bipartisan Policy Center, 2014.
- J. Staudt, PhD and J. Macedonia, "Evaluation of Heat Rates of Coal Fired Electric Power Boilers," *Proceedings of the Power Plant Pollutant Control "Mega" Symposium*, Air and Waste Management Association, 2014.
- J. Macedonia, J. Kruger, L. Long, M. McGuinness, "Environmental Regulation and Electric System Reliability," Bipartisan Policy Center, 2011.
- U.S. Government Accountability Office (panel of experts), *Climate Change Issues: Options for Addressing Challenges to Carbon Offset Quality*, Report to the Chairman, Committee on Oversight and Government Reform, House of Representatives, GAO-11-345, 2011.
- J. Grumet, J. Kruger, and J. Macedonia, "Time to Modernize Aging Power Plants and Environmental Laws," *Environmental Management Magazine*, a publication of AWMA, October 2010.
- U.S. Government Accountability Office (panel of experts), *International Climate Change Programs: Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism*, Report to Congressional Requesters, GAO-09-151, 2009.
- J. Macedonia, Emissions Market Design and Oversight Series: Lessons from U.S. Trading Programs, Lessons from the European Carbon Market, Recommendations for U.S. Climate Policy, Reports for Bipartisan Policy Center and National Commission on Energy Policy, 2009.
- U.S. EPA (lead), *Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control*, EPA430-B-03-002, 2003.

SELECT PRESENTATIONS TO NATIONAL AND INTERNATIONAL ORGANIZATIONS

- National Governors Association: 2016, 2015, 2014
- National Association of Regulatory Utility Commissioners (NARUC): 2016, 2015, 2013, 2012
- 3N: NARUC, National Association of State Energy Officials, & National Association of Clean Air Agencies: 2016, 2013
- Edison Electric Institute: 2016
- National Conference of State Legislatures: 2015
- Council of State Governments: 2015, 2014
- International Civil Aviation Organization, Environmental Advisory Group: 2015
- Energy Bar Association: 2015
- Business Council for Sustainable Energy: 2015, 2014
- Electricity Consumers Resource Council: 2012

GUEST LECTURES

- Market Mechanisms Under the Clean Air Act; Law & Economics of Natural Resources Markets, University of Chicago Coase-Sandor Institute for Law and Economics, 2020
- Acid Rain to Global Climate; Climate Finance, Johns Hopkins Advanced Academic Programs, 2020
- 24 Hours of Reality: Countdown to the Future, The Climate Reality Project, 2020

ANDREW MAYOCK

(b) (6)

McKinsey & Company

2017-Present

Associate Partner and Director of U.S. Public Sector Operations

- Manage the U.S. public sector operational team (i.e., contracts, compliance, finance, legal, proposal development, risk, security and technology) supporting over 1000 consultants who serve more than 300 federal, state and municipal clients. Key operational accomplishments include: (a) developed a new enterprise risk management tool that has become a firm-wide model; (b) automated critical functions (e.g., contract management, finance and security systems), resulting in cost savings and increased staff efficiency; and (c) restructured unit, established new culture and instituted organizational health program that significantly improved team performance scores and morale.
- Advise major organizations on their most demanding strategic, organizational and operational challenges as a member of public sector and sustainability practices. Key client accomplishments include: (a) developing green investment prioritization tool to better match cities and funding for economic recovery; (b) creating strategic plan for decarbonization organization; and (c) developed a digital engagement tool for the Department of Homeland Security to improve customer experience and rapid-response capabilities for its 5 million flood insurance customers in 20,000 communities.

The White House, Office of Management and Budget

2013-2017

Deputy Director for Management, 2015-2017

- Member of OMB's four-person executive team, leading development and implementation of the President's budget, management and regulatory agenda.
- Led 250-member management team and \$75 million budget to deliver results on a broad range of management issues: technology, procurement, financial management, personnel, performance management, cybersecurity, infrastructure permitting, real estate, open data and risk management.
- Directed the President's Management Agenda in concert with Cabinet chief operating officials. Major accomplishments included: (a) accelerating technology savings through OMB engagement in project development and oversight, achieving \$4 billion in savings; (b) institutionalizing rapidly-growing U.S. Federal Chief Information Officer and U.S. Digital Service teams; and (c) implementing workforce reforms to recruit, train and retain top talent among senior executive career officials.
- Led the 2016-17 Presidential Transition with the White House Deputy Chief of Staff. Responsibilities included: (a) liaising with major party nominees' transition team leaders; (b) overseeing seamless continuity of operations and emergency planning; (c) guiding orderly exit of current appointees and entry of future appointees; and (d) developing agency policy and operational transition plans.

Associate Director for General Government Programs, 2013-2015

- Oversaw policy and budget teams covering six cabinet agencies (i.e., Commerce, Homeland Security, Housing and Urban Development, Justice, Transportation and Treasury) and over 20 smaller agencies (e.g., Small Business Administration, General Services Administration, and Security and Exchange Commission) comprising funding of \$175 billion per year and over one million federal employees.
- Developed and guided teams to deliver on Presidential priorities, including: (a) developing and implementing climate preparedness and resilience strategy; (b) implementing the President's \$3.1 billion Cybersecurity National Action Plan; (c) creating the \$283 million Community Policing Initiative; and (d) developing the immigration executive action operations plan.
- Resolved day-to-day issues with agency counterparts, including agency heads, Congress, labor unions, private sector and non-governmental organizations on a broad range of issues, including satellites, census, foreign direct investment, customs enforcement, immigration, community policing, infrastructure, aviation, housing finance, homelessness, and disaster recovery and resilience.

Millennium Challenge Corporation**2010-2013*****Deputy Vice President of Compact Operations for East and Southern Africa***

- Managed \$2.5 billion of MCC's grant investments regarding standards on asset quality, financial management and procurement, as well as economic, environmental and social impacts for six partner countries: Lesotho, Malawi, Mozambique, Namibia, Tanzania, and Zambia.
- Guided teams in delivering economic benefits to millions of beneficiaries through better health, education, agriculture, water, transportation and electricity services and related infrastructure and policy reforms, including \$750 million in the water sector to increase water supply, sanitation and drainage; \$550 million in the transportation sector to build roads and airports; \$500 million in the energy sector to increase generation, transmission and distribution; and \$250 million in the health and education sector to build clinics, schools and libraries.
- Managed MCC's relationship with partner countries, including heads of state, ministers, ambassadors, as well as U.S. Congress, private sector and non-governmental organizations.

U.S. Treasury Department**2009-2010*****Executive Secretary***

- Established and managed critical departmental operations for Secretary Tim Geithner as part of core financial crisis response team.
- Supported a broad range of complex policy, management and communications issues, including Financial Stability Plan, Troubled Asset Relief Program (TARP), American Recovery and Reinvestment Act, China Strategic and Economic Dialogue and G20.

Booz Allen Hamilton**2003-2008*****Senior Associate, Development and International Diplomacy***

Served on senior management team for international trade and investment practice group responsible for projects with \$180 million contractual value, \$41 million annual revenues and 200 staff. Led projects ranging from \$2 million to \$18 million in the U.S., Africa, Asia, Europe and Latin America.

Harvard University, Center for Business and Government**2001-2002*****International Trade Consultant***

Developed international trade project focused on strategy development for major emerging market countries (e.g., China, Brazil and India) within WTO Doha Round.

The White House**1997-2000*****Special Assistant to the Deputy Chief of Staff, Senior Adviser to the Director of Public Liaison***

Planned and executed White House and interagency processes with agencies, Congressional staff and external stakeholders on a range of issues, including the State of the Union, Africa Growth and Opportunity Act, Fast Track legislation, budget, transportation, labor and agriculture.

U.S. Treasury Department**1995-1997*****Special Assistant to the Chief of Staff, Senior Adviser to Under Secretary for Enforcement***

Coordinated strategic planning and management of the Secretary's priority issues and drafted speeches, testimony and briefing memoranda for the Secretary, Under Secretary and Chief of Staff.

EDUCATION

Harvard University, Kennedy School of Government	MPA	2003
George Washington University Law School	JD	1995
University of Illinois at Urbana-Champaign	BA	1991

(b) (6)

Academic:

A.B. in Classics, Harvard College (1980), magna cum laude, Phi Beta Kappa
J.D., Harvard Law School (1983)

Work Experience:

10/2017-present

Indiana University Environmental Resilience Institute, Director (8/2019-present) and Assistant Director for Policy and Implementation (10/2017-8/2019)

Direct IU's Prepared for Environmental Change Grand Challenge program of research, solutions and communications around environmental resilience and assist Indiana Cities and Towns, as well as others, to assess and address their resilience to environmental change.

10/2017-present

Professor of Practice, IU McKinney School of Law

Teach courses on environmental law, advise students and related academic responsibilities

5/2017-9/2019

Senior Law Fellow, Environmental Law and Policy Center

Advise and assist ELPC's attorneys and policy analysts on legal and policy issues concerning clean air, climate change, energy, transportation in the Midwest.

7/2013-1/2017

Acting Assistant Administrator, Office of Air and Radiation, USEPA

Report to USEPA Administrator; responsible for managing 1200+ staff addressing implementation of the Clean Air Act, regulation development on climate and clean air issues, international activities, climate change research, state relations, congressional relations, budget and operational tasks. Nominated by President Obama for Assistant Administrator.

11/2009-7/2013

Principal Deputy Assistant Administrator, Office of Air and Radiation, USEPA

Responsible for policy development and implementation of Clean Air Act health standards and stationary source programs, including climate change issues, air toxics, ozone, lead, particulate matter and regional haze, state-federal relationship, tribal and international issues, working with EPA Headquarters and Regional offices, state/local/tribal governments and other stakeholders.

2005-2009

Executive Director, Improving Kids' Environment (Indianapolis, IN)

Responsible for all aspects of program development and implementation, strategic planning, fundraising and financial planning of children's environmental health organization focusing on lead poisoning prevention, pesticide exposure, asthma and other issues.

- 1998-2005 **Assistant Commissioner, Office of Air Quality, Indiana Department of Environmental Management.** Responsible for management of IDEM's Air Quality office including air permitting, planning, monitoring and compliance activities, budgeting and personnel matters, legislative and rulemaking activities.
- 1993-1998 **Branch Chief, Office of Air Quality, Indiana Department of Environmental Management**
- 1989-1993 **Assistant Secretary for Environmental Impact Review, Massachusetts Executive Office of Environmental Affairs**
- 1984-1989 **Assistant Attorney General, Environmental Protection Division, Massachusetts Attorney General's Office**
- 1983-1984 **Law Clerk, Justice Neil L. Lynch, Massachusetts Supreme Judicial Court**
- Past Activities:** --Adjunct Professor, School of Medicine Department of Public Health and School of Public and Environmental Affairs (Indiana University Purdue University of Indianapolis)
 --Member of USEPA Clean Air Act Advisory Committee
 --Member of USEPA Children's Health Advisory Committee
 --Member, NIEHS Council

Honors and Awards

Honor or Award	Grantor	Issue Date
Elected to Phi Beta Kappa	Phi Beta Kappa	1980
Richardson Bequest for Classics	Harvard University	1980
Special Recognition	Boston Harbor Association	1993
Environmental Excellence Award	Indiana Department of Environmental Management	1994, 1996, 1997
Partners for Clean Air Award	Michiana Partners for Clean Air	2013
Richard Beatty Mellon Environmental Stewardship Award	Air and Waste Management Association	2014
Recognition of Service	Environmental Council of the States	2016
Recognition of Service	National Association of Clean Air Agencies	2016

Recognition of Leadership	Federal Energy Regulatory Commission	2016
City of Indianapolis Knozone Lifetime Achievement Award	City of Indianapolis	2018
IBJ Women of Influence 2019	Indianapolis Business Journal	2019
Indiana Lawyer 2020 Leadership in Law	Indiana Lawyer	2020

FERNANDO MERCADO-VIOLAND

Biden For President

Arlington, VA | January 2020- Present

Virginia Deputy State and Political Director

- Managed Virginia political department, overseeing three staff and managing relationships with over a hundred elected officials and stakeholders, including US Senators and members of Congress. Delivered a 9.7 point win to the Biden Harris ticket.
- Executed over 50 in-person and virtual events in Virginia, including five principal trips.
- Served as the Northeast states team lead from March to July, setting up leadership councils and executing events in Virginia, Maine, New York, Vermont, Connecticut, Rhode Island, and D.C.
- Served as State Director in the Virginia primary, securing over 80 political endorsements from January to March and organizing a 3,000-person rally for Vice President Biden in Norfolk, Virginia. Delivered key Super Tuesday win for Biden with 53% of the vote, winning by 30 points and earning 99 delegates.

Kamala Harris For The People

Des Moines, IA | August 2019- December 2019

Iowa Deputy Organizing Director

- Managed a staff of eight regional organizing directors and 90 field organizers, making over a million contacts with caucus goers through phone calls, door knocks, and texts.
- Led all-staff weekly meetings and trainings in volunteer organizing as well as programmatic strategy.
- Planned principal and surrogate trips, leading organizing strategy for events. Created and implemented a targeted constituency outreach program focused primarily on Latino and African American outreach as well as engaging issue-based groups like environmental and education activists.

Office of the Governor Ralph Northam

Richmond, VA | May 2018- August 2019

Director of Latino Outreach

- Developed and implemented an outreach plan to tackle issues affecting the Virginia Latino community.
- Served as the staff liaison to the Virginia Complete Count Commission for the 2020 Census.
- Managed constituent casework, advocating within the administration on behalf of Virginians.
- Drafted and edited correspondence for the Governor and his office, including hundreds of proclamations, certificates, grant support letters, and policy communications.

Virginia House Democratic Caucus

Richmond, VA | January 2018- May 2018

Policy Coordinator

- Wrote remarks, opinion editorials, talking points, and press releases that correspond to the various legislative rollouts from the Democratic House Caucus.
- Researched and tracked legislation for the House Whip Operation in collaboration with the Governor's office and partner organizations to inform and prepare members on the caucus whip strategy.

Virginians for Attorney General Mark Herring

Richmond, VA | February 2017- November 2017

Political Director

- Led statewide political strategy, including securing endorsements from over 80 elected officials, including Sheriffs and Commonwealth Attorneys, and stakeholder organizations.
- Staffed the Attorney General at campaign events, managed surrogate strategy, and executed political events and trips with national surrogates including Eric Holder and Kamala Harris.

Democratic Party of VA

Prince William County, VA | May 2016- November 2016

Regional Organizing Director

- Managed a staff of 11 organizers and 2 deputy directors in the key battleground county of Prince William County. Coordinated with congressional and municipal campaigns to elect Democrats up and down the ballot.

Hillary for America

Iowa, Texas, Florida | September 2015- April 2016

Organizer

- Organizer for the Iowa caucuses in Muscatine and Louisa counties, organizing the highest concentration of Hispanic caucus-goers in Iowa; later organized for Super Tuesday in San Antonio, Texas.

Legal Aid Justice Center

Fairfax, Virginia | November 2014- September 2015

Community Organizer

- Organized a network of non-profit organizations to enroll uninsured Virginians by executing large-scale outreach and enrollment events. Lead grassroots lobbying efforts to protect immigrant rights in the state house.

Education

University of Virginia, Class of 2014 – Bachelor of Arts, Government and History

- Sorensen Institute at the University of Virginia Political Leaders Program 2018
- Jefferson's Public Citizen Grant Recipient 2013 – awarded \$27,000 grant to study microfinance in Bolivia
- Spanish native speaker

MARIA T. MICHALOS

(b) (6)

EXPERIENCE

NATURAL RESOURCES DEFENSE COUNCIL (NRDC)

New York, NY

Senior Manager, Executive Communications

Sept. 2020 - Present

- Lead message development for former EPA administrator and current NRDC President & CEO Gina McCarthy
- Serve as press lead for the Office of the President
- Write a range of materials, including reporter briefs, op-eds, official statements, and other press materials on behalf of the president
- Oversee coordination of the president's social media channels

U.S. Eastern Communications Manager

Sept. 2018 – Sept. 2020

- Spearhead media strategy for targeted city and state environmental and energy campaigns across U.S. Eastern region, with emphasis on New York, Pennsylvania, New Jersey, and North Carolina
- Secure placement in regional and national print media, including *The New York Times*, *Wall Street Journal*, *New York Daily News*, *Politico*, *Newsday*, *Albany Times Union*, *Buffalo News*, *Philadelphia Inquirer*, *Pittsburgh Post-Gazette*, *The Patriot-News*, *Raleigh News & Observer*, *Charlotte Observer*, *Washington Post*, *USA Today*, as well broadcast and radio
- Manage NRDC-led coalition media campaigns across the region
- Oversee coordination of Eastern communications team, including social media and digital advocacy leads, and ensure alignment and execution of tactical strategies

NEW YORK GOVERNOR ANDREW M. CUOMO

New York, NY

Director of External Communications

May 2017 - Sept. 2018

- Led development of the Governor's keynote addresses while traveling with the Governor and managing 24/7 on-call team of designers and writers
- Worked with policy, operations and agency leads to craft the 2018 State of the State and New York State Budget presentations
- Developed keynote presentations for cabinet tailored to each of the state's 10 regions

Deputy Press Secretary

May 2016 - May 2017

- Accompanied and briefed the Governor on official trips across New York State
- Prepared the Governor's public presentations, including the 2016, 2017 State of the State addresses; 2016, 2017 New York State Budget announcements; and all major public announcements regarding the Governor's initiatives for New York State
- Drafted talking points, op-eds, statements and press releases on behalf of the Governor, senior administration officials, and policy experts

EMPIRE STATE DEVELOPMENT

New York, NY

Assistant Press Secretary & Speechwriter

July 2014 - May 2016

- Drafted press releases to announce Governor's economic development initiatives for New York State
- Prepared speeches and talking points for the organization's president and commissioner
- Pitched story concepts to reporters and respond to local and national media inquiries on economic development programs including broadband, venture capital, MWBE, tax credit, and small business

ADDITIONAL EXPERIENCE

Human Rights Watch New York City

U.S. Senator Kirsten Gillibrand Washington, D.C.

Brennan Center for Justice New York City

The Raben Group Washington, D.C.

Democracy Now! New York City

SKDKnickerbocker New York City

EDUCATION

BARUCH COLLEGE, MARXE SCHOOL OF PUBLIC & INTERNATIONAL AFFAIRS

New York, NY

M.P.A., Urban Development & Sustainability

2019

Thesis: 2019: Media and Climate Breakdown

Scholarship:

- President, Pi Alpha Alpha - the National Honor Society for Public Affairs and Administration
- ERASMUS Scholar - selected for intensive academic scholarship to study migration, gentrification and displacement in Berlin, Germany; led development of U.S. team keynote address
- Marxe Student Ambassador

NEW YORK UNIVERSITY, COLLEGE OF ARTS AND SCIENCE

New York, NY

B.A., Political Science

2014

Scholarship:

- 2013 John Brademas Congressional Scholar
- 2013 Presidential Service Award recipient
- Founder's Day Award

LANGUAGE SKILLS & SOFTWARE

LANGUAGE: English (Native), Greek (Native)

SOFTWARE: Cision PR Software, LexisNexis, STATA, SPSS, Microsoft Office, Adobe Photoshop

ASHLEY M. MORGAN

(b) (6)

PROFESSIONAL EXPERIENCE

Office of U.S. Senator Thomas Carper

January 2019 – Present

Director of Scheduling, July 2019 – Present

- Oversee the implementation of the Senator's daily, weekly, and long-range schedule by working with over 60 members of staff in Washington, DC; Delaware and within two Senate Committees.
- Facilitate the scheduling of meetings, committee hearings, roundtables, and all over events the Senator attends by communicating with Congressional staff, government officials, nationwide organizations, and constituents.
- Manage the daily needs of the Senator by setting priorities and resolving issues as they arise.
- Serve as the supervisor for the Senator's scheduling team in Washington, DC.

Executive Assistant/Deputy Scheduler, January 2019 – July 2019

- Collaborated with the Director of Scheduling to maintain the Senator's schedule including arranging his travel and scheduling meetings for the Senator and his staff with Delawareans.
- Aided with the collection and archiving of the Senator's daily materials to ensure that he is prepared for all meetings, committee hearings, and events.
- Responsible for driving the Senator and his staff to and from events in Washington, DC.

U.S. Senate Committee on Environment and Public Works, Staff Assistant

June 2018 – January 2019

- Organized hearing documents including Ranking Member Carper's opening statements and questions, hearing binders, and additional materials submitted for the Congressional Record.
- Produced precise records and documentation to support Committee staff through the successful bipartisan and bicameral negotiations of the American Water Infrastructure Act of 2018.

Massie Partners, Senior Policy Assistant

June 2017 – June 2018

- Supported 16 clients with their federal affairs initiatives by producing in-depth policy memos on congressional hearings, legislation and federal government policies.
- Coordinated with the firm's financial advisor to distribute and manage monthly invoices and expenses.

ADDITIONAL EXPERIENCE

Biden for President

August – November 2020

- *Biden-Harris Policy Volunteer, August – November 2020*
- *GOTV Volunteer Leader, October 31 – November 3, 2020*

The White House Office of Legislative Affairs, Intern

September – December 2016

The Office of U.S. Senator Joe Manchin III, Intern

May 2015 – July 2015

EDUCATION

West Virginia University, Morgantown, WV

- **Masters of Public Administration, Phi Alpha Alpha GPA 4.0** May 2017
- **Bachelor of Science, Sport and Exercise Psychology, Summa Cum Laude GPA 3.88** May 2015
 - Class of 2015 Outstanding Senior, graduated in the top 1%
- **Campus Engagement**
 - Division of Student Life Graduate Assistant, 2015-2016 Student Body Vice President, Council for Women's Concerns, LGBTQ+ Commission, Athletic Council, Student Conduct Board Representative

EDUCATION

Harvard Law School, Cambridge, MA
Doctor of Juridical Science (S.J.D.), May 2011

Harvard Law School, Cambridge, MA
Master of Laws (LL.M.), June 2003

Instituto Tecnológico Autónomo de México (ITAM), Mexico City, Mexico
Bachelor of Laws (LL.B.), graduated with honors, December 2000

EXPERIENCE

Sierra Club April 2014 - January 2020; July 2020 - present
Senior Attorney, Environmental Law Program

- Led Sierra Club's legal work on corporate average fuel economy (CAFE) and greenhouse gas standards for light- and heavy-duty vehicles. Drafted legal comments on proposed rule; assisted with litigation regarding final rule. Litigated EPA's reconsideration of its mid-term review of the current light-duty standards. Won challenge to NHTSA's delay of applicability of civil penalties for violation of CAFE standards.
- Litigated motion to stay and petition for review of the Clean Power Plan as intervenor in support of EPA. Drafted technical and legal comments on proposed Clean Power Plan, federal plan and model trading rules, Clean Energy Incentive Program, and state implementation plans.
- Advised Sierra Club on legal and policy implications of the United States' withdrawal from the Paris Climate Agreement.
- Co-authored Sierra Club's guidance on carbon pricing, approved by the organization's Board of Directors.
- Provided expert advice to state teams on carbon pricing policies and adoption of California standards.
- Led legal and policy work on environmental justice in climate policies; drafted comments on EPA's EJ 2020 strategy; authored Sierra Club guidance documents on environmental justice and equity.
- Led legal work in connection with hurricane relief and recovery efforts in Puerto Rico after Maria storm.
- Led Beyond Coal Campaign's work in Latin America, providing legal and policy advice to non-profit groups challenging the coal industry and advocating for carbon pricing policies in several countries.
- Chaired GreenLatinos' Working Group on Climate Change (2016-2018), an alliance of green groups, environmental justice, and social justice organizations advocating for strong climate and air rules that benefit Latino communities.

Coalition for Green Capital January 2020 - July 2020
General Counsel

- Reviewed proposed elements of the proposed National Climate Bank Act. Researched and evaluated relevant statutes and regulations, and provided input on proposed legislation.
- Monitored lobbying reporting and limitations for the nonprofit organization.
- Developed key policy elements of a program that would use the Climate Bank to buy-out coal power plants.
- Assisted with coalition-building with environmental, environmental justice, and labor groups.
- Managed the nonprofit organization's legal affairs, including human resources and employment law issues.
- Provided guidance on CARES Act relief to Coalition for Green Capital and American Green Bank Consortium.

American University Washington College of Law January 2017 - May 2018
Adjunct Professor

- Taught "Advanced Energy Law," with a focus on climate change regulations, renewable energy, and energy efficiency.

The World Bank, Legal Vice Presidency

September 2012 – April 2014

Associate Counsel, Finance, Private Sector Development, and Infrastructure

- Prepared comments to draft power purchase agreements for solar energy project in Morocco and natural gas project in Senegal; reviewed RFP and draft project agreements for coal project in Kosovo.
- Prepared comments to client countries' proposed legislation, including a bill to create a national infrastructure fund in Paraguay and omnibus industry law in Indonesia.
- Drafted memoranda on private sector-related legal issues raised in World Bank's internal policy documents, including on the application of Bank policies on environmental impact review to technical assistance projects, and on Bank's support for public-private partnership (PPP) projects in the water, energy, and telecommunications sectors.
- Prepared reports and toolkits on rural water supply PPPs, airport privatization, natural gas industry PPPs, and corporate governance of state-owned enterprises, with an emphasis on oil companies.

Morrison & Foerster LLP, San Francisco, CA

April 2010 - September 2012

Associate, Environment & Energy

- Prepared memoranda on various issues of federal and California environmental and energy law, including public trust doctrine, IUU fishing, endangered species, coastal zone management plans and sea level rise, environmental impact review, and large generator interconnection procedures for solar projects.
- Prepared legal memoranda and persuasive letters on federal airport law issues, including rates and charges and revenue diversion in connection with fuel supply leases, arrangements for fuel supply provision at major hub airports, guidelines for solar energy development, and lease and use agreements.
- Supported senior attorneys in the drafting and negotiation of lease and use, and concession agreements in a major airport privatization transaction in the United States; assisted in the review of related agreements in connection with a bid for the concession of three large airports in Brazil.
- Represented The Nature Conservancy in connection with a carbon project in an Amazonian national park and a land conservation project in northern Kenya.

World Water Assessment Programme, UNESCO, Paris, France

July 2005 - December 2005

Research Intern

- Co-authored chapter of the World Water Development Report 2 (on water pricing and public-private partnerships in water supply and sanitation), presented in the 4th World Water Forum.

Stanford University, Palo Alto, CA

November 2003- July 2004

Research Fellow, Program on Energy and Sustainable Development

- Prepared study on economic, legal, and political issues affecting private investment in independent power production projects in Mexico.

PUBLICATIONS

- Statutory Framework Underlying Exxon Investigations by the Attorneys General of New York and Massachusetts (with Joanne Spalding), in American Bar Association, Section of Environment, Energy, and Resources, Vol. 13, No. 3 - August 2017.
- "Is the Public Trust a Viable Mechanism to Regulate Climate Change?" (with Edgar Washburn), NATURAL RESOURCES AND ENVIRONMENT, Volume 27, Issue 2 (American Bar Association, 2012).
- "Riding the Wave: Confronting Jurisdictional and Regulatory Barriers to Ocean Energy Development" (with Danielle Murray, Christopher Carr and Jennifer Jeffers), 5 GOLDEN GATE UNIV. ENVTL. L. J. (2011).
- "Valuing and Charging for Water" (with Deanna Donovan), in WATER: A SHARED RESPONSIBILITY. THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2, Chapter 12, United Nations' World Water Assessment Programme, March 2006).

VOLUNTEER EXPERIENCE

Volunteer Board Member, Clean Energy Credit Union (appointed on October 26, 2020).

GRANT P. O'BRIEN

Seasoned and trusted Advance professional seeking to leverage eight-plus years of political and finance experience. Demonstrated leader and relationship builder. Proactive multitasker committed to exceeding expectations. Master of Business Administration and Master of Public Administration.

POLITICAL EXPERIENCE

Led principal movement and site logistics for national political and official events including large-scale rallies, GOTV, debates, fundraisers, and policy round-tables. Served as primary point of contact on campaigns for candidates, official offices, federal, state, and local agencies, media entities, and a wide range of production vendors.

59TH PRESIDENTIAL INAUGURAL COMMITTEE WASHINGTON. DC

ASSOCIATE DIRECTOR OF EVENTS & CEREMONIES DEC. 2020 TO JAN. 2021

BIDEN FOR PRESIDENT NATIONAL

NATIONAL ADVANCE STAFF APR. 2019 TO NOV. 2020

HILLARY FOR AMERICA NATIONAL

NATIONAL ADVANCE STAFF APR. 2015 TO NOV. 2016

OBAMA FOR AMERICA NATIONAL

NATIONAL ADVANCE STAFF JUN. 2012 TO NOV. 2012

FINANCE EXPERIENCE

BMO PRIVATE BANK CHICAGO. IL

PRIVATE WEALTH ADVISOR NOV. 2017 TO FEB. 2018

Managed over \$50 million in assets and served as a lead advisor and relationship manager to high-net-worth individuals, families, and organizations, including closely-held and family-owned businesses. Worked closely with clients to fully understand their short, middle, and long-term wealth and philanthropic planning goals. Liaised with client strategy teams to create a tailored financial plan in pursuit of clients' objectives.

PRIVATE WEALTH ANALYST AUG. 2015 TO NOV. 2017

Supported three Private Wealth Advisors in all efforts to retain and grow existing client portfolios and attract prospective clients through targeted research initiatives, proactive and personalized outreach, and an individually tailored and exceptional customer experience.

OGILVY & MATHER ADVERTISING CHICAGO. IL

CLIENT FINANCIAL ANALYST JUN. 2013 TO AUG. 2015

Supported financial analysis, budget, forecasted revenue, and profitability reporting for two of Ogilvy's marquee clients, including accounts payable / receivable, accrued / deferred revenue, monthly billing activity, and revenue allocation. Final reports were cited in Ogilvy's annual profit & loss statement.

(b) (6)

EDUCATION

CORNELL UNIVERSITY ITHACA. NY

MASTER OF PUBLIC ADMINISTRATION 2020
GOVERNMENT, POLITICS & POLICY STUDIES

DEPAUL UNIVERSITY CHICAGO. IL

MASTER OF BUSINESS ADMINISTRATION 2013
FINANCE & ENTREPRENEURSHIP

LOYOLA UNIVERSITY NEW ORLEANS. LA

BACHELOR OF ARTS 2011
POLITICAL SCIENCE

SKILLS

ACCOUNTING & RECORD KEEPING

BUDGETING & FINANCIAL FORECASTING

COMMUNITY OUTREACH

DATABASE MANAGEMENT

EVENT PRODUCTION

GRASSROOTS ORGANIZING

LOGISTICS COORDINATION

PUBLIC POLICY ANALYSIS

PUBLIC SPEAKING

SOFTWARE

GOOGLE SHEETS & MICROSOFT EXCEL

NGP VAN

SALESFORCE & COMPARABLE CRM PLATFORMS

SAP CONCUR & SAP SE

INTERNSHIPS

THE WHITE HOUSE WASHINGTON. DC

OFFICE OF THE VICE PRESIDENT 2014

U.S. SECRET SERVICE CHICAGO. IL

CHICAGO FIELD OFFICE 2010

U.S. SENATE WASHINGTON. DC

OFFICE OF U.S. SENATOR DICK DURBIN 2009

Education

Master of Public Administration | Federal Policy, Politics, and Management
George Washington University

Bachelor of Science | Earth and Environmental Science
North Carolina Agricultural and Technical State University

Certificate Program of Legislative Studies
Georgetown University

Professional Experience

NC Department of Environmental Quality (NC DEQ) | Cabinet Secretary – Appointed by Governor Roy Cooper
January 2017 – Present
Raleigh, NC

M. Regan & Associates | Founder
September 2016 – February 2017
Raleigh, NC

Michael S. Regan founded M. Regan & Associates to help organizations find transformational solutions for the most important energy, environmental and economic challenges. With over 18 years of experience focused on environmental protection and public health, M. Regan & Associates was established to provide consultation in the areas of policy, regulation, strategy, implementation, management and fundraising.

Environmental Defense Fund
February 2008 – July 2016
Raleigh, NC

Associate Vice-President | US Climate and Energy & Southeast Regional Director | (2015 – 2016)

- Provided overall vision, strategy and leadership for US Climate and Energy program implementation: rewriting outdated regulations, spurring energy services markets, and modernizing century-old electric grid
- Managed complex negotiations with electric utilities, environmental organizations, industry associations and legislators; worked effectively with government officials, corporate business leaders, environmental advocates, academic leaders and elected officials
- Formulated program budget, objectives, priorities and implemented plans consistent with the organization's long-term interests in a global environment
- Partnered with executive-level development staff to create new and exciting ways for the funder/donor community to contribute
- Demonstrated strong political skills with a track record of building non-partisan alliances and an understanding of public policy

National Director | Energy Efficiency and Southeast Climate & Energy Policy | (2008 – 2015)

- Led national Energy Efficiency program and Southeast Climate and Energy program operations including fundraising, budget formulation/execution and resource allocation as well as provided strategic vision, leadership and direction to program staff in multiple states with diverse professional experiences (i.e., policy, scientist, economist, energy generalists, attorneys, administrative)

(b) (6)

- Designed regulatory and non-regulatory mechanisms for multi-pollutant emission reduction strategies regarding key industrial sectors to improve environmental conditions and air quality
- Designed and implemented non-regulatory, legislative and policy strategies to strengthen clean and reliable energy management (grid technology, renewable energy, efficiency business models and finance solutions), reduce pollution and encourage sustainable energy choices
- Managed complex negotiations with electric utilities, environmental organizations, industry associations and legislators; worked effectively with government officials, corporate business leaders, environmental advocates, academic leaders and elected officials
- Collaborated with executive team and senior program leaders across the organization to ensure delivery of outcomes and cross-programmatic execution of most pressing issues; communicated program milestones and effectiveness to senior level stakeholders, EDF board members and donors
- Served as regional/national spokesperson on clean energy solutions and market-based policy options for news and print media

United States Environmental Protection Agency

September 1998 – February 2008

Washington, DC | Research Triangle Park, NC

Supervisory Environmental Protection Specialist | Office of Air Quality Planning & Standards

November 2006 – February 2008

Research Triangle Park, NC

- Designed viable regulatory and non-regulatory mechanisms to implement multi-pollutant, sector-based emission reduction strategies established upon comprehensive information regarding key industrial sectors, regulated/non-regulated emissions, facility operations, economic and growth profiles and capital planning cycles to improve air quality
- Developed strategic “win-win” alliances/partnerships with Industries, State, Local and Tribal agencies, academic institutions, Federal land managers and various external stakeholders to identify and propose ways to meet regulatory and environmental objectives
- Coordinated control requirements to reduce redundancies among EPA’s programs to improve efficiency, cost-effectiveness and emission reduction targets
- Provided management direction and leadership for re-designing EPA’s New Source Performance Standards (NSPS) program to satisfy EPA’s programmatic goals in concert with future multi-pollutant sector-based efforts, energy efficiency and climate goals
- Developed written communication materials in support of environmental programs, including, but not limited to Congressional and controlled correspondence, regulatory packages, program fact sheets concerning key issues, policy memoranda, legislation interpretation and environmental guidance

Environmental Protection Specialist | Office of Air Quality Planning & Standards

June 2003 – October 2006

Research Triangle Park, NC

- Developed/coordinated special cross cutting projects and diverse teams, policy recommendations, planning initiatives and innovative mechanisms designed to meet and/or exceed program objectives for reducing air pollution and protecting human health. Required harmonization among various media offices within EPA, Federal Advisory Councils, State and Local air pollution control agencies, and other Federal and non-Federal agencies
- Served as team lead (Pulp and Paper Sector Strategy) ensuring a collaborative environment to optimize products, presentation of deliverables to senior management, and budget expenditures, bolstering team assurance in demonstrating technical knowledge and operational functionality while focusing on systematic progress toward goals

(b) (6)

- Directed work efforts for drafting and developing national air quality policy options and guidelines based upon sound technical and legal grounds. Coordinated the development of national regulations, policies, and guidelines with EPA Headquarters, other Federal agencies, Tribes, Federal Advisory Councils and State and Local air pollution control agencies

Special Assistant | Director of Radiation and Indoor Air – Office of Radiation & Indoor Air

September 2001 – June 2003

Washington, DC

- Developed/coordinated special cross cutting projects, policy recommendations, initiatives and activities, which required harmonization among various media offices within EPA, Federal Advisory Councils, State and Local air pollution control agencies and other Federal and non-Federal agencies
- Developed/facilitated policy recommendations and guidance to senior managers for program operations; assisted in the development of new or revised standards and regulations
- Coordinated internal programs, policy discussions and cross media projects with various parts of the Agency and other Federal and non-Federal agencies
- Researched material and developed speeches, background documents, Congressional testimony and presentations
- Served as office liaison to the U.S. Assistant Administrator's office and throughout EPA where areas of mutual interest exist

Special Assistant | U.S. Assistant Administrator of Air and Radiation – Immediate Office of Air and Radiation

September 1998 – September 2001

Washington, DC

- Coordinated/developed speeches and testimony, environmental justice policy research and development, and communication strategies for the U.S. Assistant Administrator, Deputy Assistant Administrator, Chief of Staff and Program Directors
- Assisted teams in defining source toxics, improving EPA's understanding of the risk of these toxics and strengthening partnerships with state and local government
- Responded to information requests from Capitol Hill, EPA Administrator, National and Local Press and State and Local agencies
- Provided logistical support to Deputy Assistant Administrator for development and implementation of the Air and Water Subcommittee of the National Environmental Justice Advisory Council
- Served as liaison to the State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials, the Office of Program Management Budget and the Office of Congressional and Intergovernmental Relations

Appointments to Executive & Legislative Commissions and Councils

- University of North Carolina Chapel Hill School of Law – Center for Climate, Energy, Environment and Economics
- Gubernatorial appointment to the NC Energy Policy Council
- Legislative appointment to the NC Legislative Commission on Global Climate Change
- Executive Steering Committee of Envision Charlotte – Clinton Global Initiative

Loni Jennifer Cortez Russell, M.S.

(b) (6)

Public Engagement professional, direct advocacy and community relations leader with expertise in areas of constituency engagement, climate change and environmental policy. Strong people management experience. Extensive experience in non-profit campaign and program management, proven track record in diverse stakeholder management and execution of policy advocacy and communications campaigns at local, state and federal level.

- Program Management
- Communications Leadership
- Campaign/Advocacy Expertise
- Conflict Resolution
- Cross-Departmental Collaboration
- Team Development & Leadership
- Media Relations & Engagement
- Grant Administration
- Budget Administration

PROFESSIONAL EXPERIENCE

DIRECTOR OF PARTNER ENGAGEMENT, Climate Action Campaign, Washington, DC

June 2018 – Present

- Oversee \$1.1M+ departmental budget, managing a team of 4+ staff, set strategic direction, annual priorities and work plan and performance metrics. In the past year, directed 1,000+ actions by coalition partners.
- Develop and execute CAC's power mapping and engagement plan for activating diverse, high-influence, national and state partnerships to advance the organization's strategic plan. Effectively established 40+ core relationships nationally and in 11 key states. Development of work plans and campaign coordination for each entity.
- Manage the timely distribution of \$1.1M+ in grant funding to strategic partner organizations including coordination, communications and policy support to a national network of partners from the Latinx, African American, Faith, Public Health, National Security, Indigenous, Environmental Justice, Agriculture, Business and Youth advocacy sectors.
- Direct cultivation and stewardship of partnership portfolio has resulted in 100+ earned/generated media in regional and national publications, submissions of 100,000+ comments to federal agencies on critical environmental protections and 20+ highly successful advocacy events.

INDEPENDENT PROGRAM CONSULTANT, San Francisco, CA

2017 – 2018

- Oversaw and managed the highly successful campaign to mobilize support for California AB 398 and AB 617, landmark public health and environmental protections. Mobilized hundreds of members and community activists. Both bills passed the state Assembly and Senate and were signed by the Governor in July 2017.
- Organized over 200+ youth of color and 20+ families to participate in public hearing to mobilize support for strong health protections for children and vulnerable communities including in a multi-stakeholder press event.

ENVIRONMENTAL DEFENSE FUND, San Francisco, CA

2011 – 2017

Deputy National Field Manager, Western States – Moms Clean Air Force

- Managed full life cycle recruitment of a performance-driven team of 7.
- Successfully launched the California state chapter; grew membership from 40K to 100K+.
- Recruited over 500+ activists over 4-year tenure. Planned and executed outreach and engagement campaigns alongside 150+ activists and national climate / public health advocates.
- Employed leadership by identifying and securing necessary resources to develop 7+ state organizational chapters. States included OR, WA, CO, NM, TX, MT, AK and NV/AZ. Demonstrated aptitude in remote and onsite management.
- Played an integral leadership role in launching annual, national 750+ attendee, 2-day event comprising 130 US Capitol legislative meetings.
- Spearheaded implementation of dynamic and engaging communications across traditional and social media outlets to drive brand awareness and cultivate activist outreach.
- Represented and presented on behalf of organization at various regulatory agencies and conferences including the US EPA, US BLM, California Air Resources Board, and at the UNFCCC Conference of the Parties 21 in Paris.
- Promoted from Regional Field Manager position just 18 months into tenure.

Loni Jennifer Cortez Russell, M.S.

Page Two of Two

Program Coordinator / Program Associate / Program Assistant – US Climate & Energy

2011 – 2014

- Held full accountability for directing cross-functional efforts of a team of 12 in daily program operations. Administered \$1M+ budget.
- Generated and standardized multiple development reports and proposals, memos, program updates, and materials that garnered \$1M+ in revenue.
- Forged and sustained program-critical executive, internal, and external relationships to achieve program success.
- Began tenure as a Program Assistant to rapidly advance through a number of specialized roles in recognition of exceptional capabilities.

ADVISOR, “The Story We Want” – Climate Listening Project, Multiple locations across the U.S.

2015- 2016

- Advisor to the development, creation and execution of five-part documentary film project, *The Story We Want – A Five Part Series*, on the impact of pollution on American communities.
- Recruitment of impacted communities featured in film, on-site production and extensive travel throughout the US with Director Dayna Reggero.
- Recognition by Los Angeles Women’s International Film Festival 2018, Micropolitan Film Festival 2018, Cat Fly Indie Film Fest 2018 and Connect Beyond the Page Festival 2018.

US CONSULATE GENERAL FELLOW – COMMERCIAL SERVICE, US Consulate Germany, Munich, Germany

2010

- Program support to international trade specialists in several industries including agriculture, sports and recreation.
- Implemented the Gold Key Service, an international trade service, in assisting American companies in finding wholesalers and distributors for their goods in the German market.

HEALTH INTERN – HEALTH AND HUMAN DEVELOPMENT, United Nations on Drugs and Crime, Vienna, Austria

2009

- Gained vital industry experience in the realm of global public health.
- Performed extensive research on global public health issues and wrote comprehensive reports on findings.
- Generated and implemented an internal on-boarding manual for new hire interns.

EDUCATION & CREDENTIALS

Master of Science in Political Science, Lund University, Lund, Sweden, 2011

Bachelor of Arts in Global Studies, University of California Santa Barbara, Santa Barbara, CA, 2007

Certifications: Filipino Language 2018, Conflict Resolution in the Workplace 2017, The Shanti Project Peer Support Health Volunteer Training 2012, Teaching English as a Second Language 2011, United Nations HIV / AIDS Training 2009, German Language B1 2007

Languages: English, German (Professional), Filipino (Intermediate), Spanish (Elementary), Swedish (Elementary)

OUTREACH & COMMUNITY ENGAGEMENT

Filipino Young Professionals Washington DC, Vice President of Executive Board, 2019 - Present

National Association of Asian American Professionals, Member, 2019 – Present

National Federation of Filipino American Associations, Member, 2018 – Present

The Shanti Project, Mental Health Client Support & Training Facilitator, 2012 – 2018

South of Market SoMa Pilipinas, Mobilizing Filipino Culture, Arts, & Business in San Francisco, 2016 – 2018

University of California San Francisco Center for Vulnerable Populations, Outreach Volunteer, 2017

Juan Sabater

(b) (6)

PROFESSIONAL EXPERIENCE

Florida Coordinated Campaign

Homestead, FL

Field Organizer

Jul 2020 - Nov 2020

- Recruited 950 shifts in support of the FLCC to contact voters through OpenVPB, ThruTalk, and ThruText; launching and completing over 565 shifts in the process.
- Managed a team of 3 Volunteer Leaders in the Homestead Community to support virtual phone banking operations and manage a team of 65 Active Volunteers within turf.
- Fostered relationships with overseas and distributed activist groups to assist in voter contact within Miami-Dade County effectively bringing in 60+ extra volunteers.
- Conducted a fully digital field program utilizing Google Suite, Zoom, and Mobilize America.
- Designed the social media branding for the statewide campaign team and went beyond scope of responsibilities to create campaign graphics for social media to advertise campaign events and activities.

Bendixen and Amandi International

Miami, FL

Research Associate

Jun 2019 – Dec 2019

- Analyzed and interpreted data to identify patterns and solutions, including surveys and focus groups
- Compiled data and analytics into large presentations to be presented to high-profile clients.
- Developed graphic branding styles for client PowerPoint Presentations.
- Utilized Microsoft Word, Excel, Powerpoint, and Google Docs to document and organize data.
- Assisted in podcast production including audio recording and editing through Adobe Audition.
- Transcribed audio to be utilized for analysis and presentations.

RELEVANT EXPERIENCE

Organizing Corps 2020

Miami, FL

Corps Member

May 2020

- Trained in a 5 Day Virtual Bootcamp through Organizing Corps 2020, a DNC-sponsored effort in coordination with the Florida Democratic Party, led by veteran campaign staff that recruits and trains first-time organizers on the skills they need to succeed as field organizers.
- Participated in workshops and simulations on the fundamentals of organizing: voter registration, volunteer recruitment, voter contact, digital tools, data analytics, Vote Builder, and field strategy.

Gwen Graham For Governor Campaign

Miami, FL

College Intern

Jun 2018 – Aug 2018

- Lead and Trained a team of 20 volunteers in a fast-paced environment.
- Conducted phone banking, canvassing, and event coordination in support of the campaign.
- Strategized and executed various social media initiatives.
- Gained skills in team-leadership, time management, social media outreach, data input, community outreach, and Vote Builder.

EDUCATION

FLORIDA INTERNATIONAL UNIVERSITY

Miami, FL

Bachelor of Arts. Political Science (Jul 2019)

- GPA: 3.2
- **Awards & Honors:** FIU Merit Scholarship Recipient, Dean's List

ADDITIONAL SKILLS

- Vote Builder
- Adobe Suite: Audition, Premiere, After Effects
- Canva
- Data Analysis with Cross Tabs from polling
- Process Implementation
- Social Media management on notable sites such as Twitter, Instagram, and Facebook.

(b) (6)

QUALIFICATIONS

- Policy expert and organizational leader with more than 10 years of experience at the intersection of politics and policy in the transportation, water, and energy/climate sectors.
- Experience advising and staffing principals in high-pressure, results-driven, politically sensitive environments, including national political campaigns, the Executive Office of the President, and with elected/government officials, labor union leaders, and business executives.
- Demonstrated record of organizational management, strategic planning, and partnership-building.

BIDEN-HARRIS CAMPAIGN EXPERIENCE

- Served Climate & Resilience Sub-Committee Co-lead on campaign's Infrastructure Policy Committee.
- Co-led Infrastructure Policy Committee's GOTV program.
- Member of Climate, Energy and Environment Policy Committee.

PROFESSIONAL EXPERIENCE

United for Infrastructure, CEO and Co-Founder

2014 – Present

- Co-founded national infrastructure advocacy and educational non-profit, led by the AFL-CIO, U.S. Chamber of Commerce, Brookings, American Society of Civil Engineers, and other organizations. Balanced complex political and policy priorities to unite labor, business, and government stakeholders.
- Conceived and organized [Moving America Forward](#), the first-ever presidential candidate forum on transportation and infrastructure, featuring then-Vice President Joe Biden, Senator Amy Klobuchar, Mayor Pete Buttigieg, and Tom Steyer; moderated by The Wall Street Journal, broadcast on C-SPAN.
- Led the infrastructure community's largest and most diverse multi-year national advocacy coalition and campaign. Grew coalition from 22 to more than 500 affiliate organizations in 7 years. Catalyzed programs in more than 35 states. Achieved more than 600 million social media impressions; nearly 1,000 print, tv, and radio news hits; engaged leaders including Vice President Biden, cabinet secretaries, governors, mayors, members of congress, union leaders, and corporate executives.
- Oversaw strategic-planning and partnership-building. Raised > \$1 million budget, managed staff, hiring, and relations with board of directors. Served as organization's spokesperson in the media.
- Convened public and private forums on topics including highways, transit and rail, resilience and sustainability, aviation, jobs, equity and inequality, dams and levees, drinking water and wastewater.

Council on Competitiveness, Senior Policy Director

2013 – 2015

- Evaluated public-private partnership models for U.S. Department of Energy to accelerate clean energy research, development and deployment; distilled expert interviews and produced research studies; planned and executed regional listening sessions and national summit.
- Staffed the President and CEO; wrote speeches, talking points, and briefing memos, and supported donor and member engagement.

Professional experience continued on next page...

PROFESSIONAL EXPERIENCE (CONTINUED)

Navigant Consulting, Senior Consultant - Energy Efficiency Policy & Analysis 2012 – 2013

- Constructed technical tools for U.S. Department of Energy national laboratories to streamline project reporting and manage >\$300 million in investments in energy research, development, and deployment.
- Implemented verification and enforcement process for EPA EnergyStar and Department of Energy minimum performance standards program. Developed deep understanding of the Code of Federal Regulations. Interfaced between federal agency client, testing laboratories, and engineering teams.

White House Council on Environmental Quality, Policy Intern 2011

- Contributed to finalizing and rolling out the Obama Administration's [National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate](#).
- Facilitated interagency coordination to encourage data interoperability across federal water agencies.
- Supported CEQ delegation planning for 2011 U.N. climate negotiations; drafted remarks for the Deputy Director on climate adaptation, green economy, and clean transportation.
- Analyzed impacts of federal rulemakings, tracked appropriations for land, water, and climate issues.

Center for Energy and Environmental Policy, Policy Analyst 2009 – 2011

- Evaluated the technical feasibility and energy, climate and financial impacts of state energy efficiency resource standards; conducted rigorous quantitative analysis; supported stakeholder outreach.
- Wrote talking points, presentations, and remarks for the executive director.

Obama for America, Field Organizer 2008

- Recruited, trained, and managed 150 volunteers/staff, winning key Pennsylvania swing district.
- Organized rallies and events for principals, including President Obama and Vice-President Biden.

EDUCATION

University of Delaware, Master of Energy and Environmental Policy, summa cum laude May 2012

University of Delaware, Bachelor of Arts in Economics, International Relations, and History May 2008

Dan G. Utech

(b) (6)

PROFESSIONAL EXPERIENCE

CONSULTANT

Washington, DC/Madison, WI

• *Consultant to foundations and non-governmental organizations on climate policy.*

12/17-present

YALE UNIVERSITY

New Haven, CT

Lecturer, School of Forestry and Environmental Studies

8/17-present

• *Lecturer on climate change and energy policy.*

WHITE HOUSE DOMESTIC POLICY COUNCIL

Washington, DC

Deputy Assistant to the President for Energy and Climate Change

12/14-01/17

Special Assistant to the President, Deputy Director

05/10-12/14

• *Led White House and cross-governmental teams to implement President Obama's Climate Action Plan.* The 2013 Climate Action Plan comprised the Obama Administration's major second-term efforts to achieve three objectives: reduce U.S. greenhouse gas emissions, enhance U.S. resilience to climate change impacts, and lead international efforts to combat climate change. Implementation required effective leadership and coordination of a set of large, horizontal policy team across the entirety of the U.S. government. Major initiatives under the Climate Action Plan included: the Clean Power Plan, the U.S. Environmental Protection Agency's regulation to limit carbon dioxide emissions from power plants; vehicle fuel efficiency and greenhouse gas standards promulgated by the Environmental Protection Agency and Department of Transportation; the Department of Interior's oversight of coal, oil, natural gas and renewable energy development on public lands; the Department of Energy's establishment of energy efficiency standards for dozens of energy-consuming products; and the Quadrennial Energy Review, a cross-governmental energy policy review. Team leadership included integration of domestic policy efforts with a large portfolio of diplomatic work under the UNFCCC, the Montreal Protocol and ICAO.

• *Led White House and Administration energy and climate change communications strategy.* Led team comprised of White House policy, communications, public engagement and legislative affairs staff to announce and publicize dozens of Presidential and White House initiatives and programs. Oversaw production of related communications materials, including fact sheets, press releases and White House reports. Represented the Obama Administration in press interviews, at conferences and at other public events.

• *Staffed President Obama and Senior White House Staff on energy and climate change policy developments and issues.* Developed environmental initiatives for inclusion in the annual State of the Union address and other Presidential events and speeches. Made presentations to White House Chief of Staff and other senior staff on topical energy and climate change issues on a biweekly basis, and to the President ad hoc; drafted policy memoranda and related materials for the President.

• *Promoted Administration Agenda in Congress.* Worked with White House colleagues, external stakeholders, and Congressional members and staff to advance and defend President Obama's agenda by: providing technical assistance to support passage of legislation (e.g., 2015 extension of the renewable energy production and investment tax credits); engaging members of Congress to promote and explain Administration policy actions and proposals; ensuring consistent Administration communications with Congress on key issues.

- *Managed Relationships with Key Stakeholders.* Developed and maintained relationships with a diverse group of external stakeholders to further Administration environmental goals, including leaders of environmental NGOs, major industry associations and companies, organized labor, and non-federal government representatives.

**U.S. DEPARTMENT OF ENERGY
DC**

Washington,

Senior Advisor to Secretary Chu

02/09-05/10

- Guided Secretary Chu through the Senate confirmation process and served on the senior leadership team that ran the transition of the Department of Energy from control by the Bush Administration to control by the Obama Administration. Responsibilities included budget development, management of key initiatives (e.g., nuclear waste policy), and strategic advice to Secretary Chu on policy decisions and stakeholder interactions.

**UNITED STATES SENATE
DC**

Washington,

Senior Advisor to Senator Hillary Rodham Clinton

09/03-02/09

- Advised Senator Clinton on all energy and environmental issues, including climate change, renewable energy, energy efficiency, green jobs, clean diesel, nuclear safety, air and water quality, toxic substances, endangered species.
- Guided Senator Clinton's leadership of two Senate subcommittees - the Senate Environment and Public Works Subcommittee on Wildlife and Water, and the Senate Environment and Public Works Subcommittee on Superfund, Toxics and Environmental Health. Clinton legislation and oversight focused on water infrastructure, endangered species, toxic waste cleanup, and environmental justice.
- Drafted and worked to enact legislation on a bipartisan basis with staffs of other members of the Senate and in partnership with a range of external stakeholders, including industry, environmentalists, and state and local governments.
- Wrote speeches and related materials for Senator Clinton, including two major energy speeches and numerous Senate EPW Committee statements; wrote press releases and handled media inquiries.

Legislative Assistant to Senator Jon S. Corzine

04/01-09/03

- Staffed Senator Corzine on the Senate Environment and Public Works Committee, focusing on chemical plant security, clean air policy, climate change policy.

Legislative Fellow on Senate Environment and Public Works Committee

08/99-04/01

- Assisted committee staff and Ranking Member on hazardous waste and wildlife issues, including clean up of contaminated "brownfields" sites, as well as endangered species.

**U.S. AGENCIES
DC**

Washington,

Presidential Management Fellow

07/97-08/99

- Rotated between assignments at U.S. EPA, the National Oceanic and Atmospheric Administration, and the U.S. Forest Service (water resources).

OTHER PROFESSIONAL EXPERIENCE

Summer 1996 Associate, ICF Kaiser International, Inc.

Fairfax, VA

Junior Consultant at Jaakko Pöyry Consulting (1992-1994)

Tarrytown, NY

- Advised forest product companies, investment banks and government agencies on paper recycling market trends and project feasibility.

EDUCATION

Yale School of Forestry and Environmental Studies, M.E.S., 1997

Yale School of Management, M.P.P.M., 1997

Amherst College, A.B. Cum Laude, 1988

New Haven, CT

New Haven, CT

Amherst, MA

ERIC E. WACHTER

(b) (6)

PROFESSIONAL EXPERIENCE

DIRECTOR OF PROGRAMS AND STRATEGY

11/2019 – Present

WPP – New York, NY

Serve as a key member of global people team, implementing strategy and modernization programs on time and on budget. Identify inefficiencies and provide solutions to the Chief People Officer and team members. Support the heads of verticals across the organization, collaborating with multiple departments including Finance, Procurement, Facilities, Legal, IT, and Budgeting. Support leaders across the organization by in implementing organizational priorities, identifying opportunities, and providing cohesive organizational leadership.

- **C-suite/VP-level Influence:** Assisted the Chief People Officer in multiple stakeholder communications by developing a people management narrative and translating complex topics into simpler themes for different audiences.
- **Operations Leadership:** Advanced smooth and efficient operations by ensuring that staff across the organization understood the goals and future direction of the organization.
- **Strategic Project Management:** Established and executed companywide initiatives and events including town halls, internships programs, and the COVID-19 rapid response.

MANAGER OF PEOPLE OPERATIONS AND ADMINISTRATION

5/2019 – 11/2019

WPP – New York, NY

Day one and key team member of new Chief People Officer for successful rollout of a large-scale global modernization program. Earned promotion within first six months with outstanding performance. Planned and directed administrative, financial and operational activities for the people management team on behalf of the CPO. Organized development of new processes and solved critical issues to facilitate day-to-day action, communication, and efficient decision-making.

- **Senior Management Support:** Directly supported the people (HR) team with strategic planning, hiring, advising on company policies, stakeholder communication and managing project initiatives.
- **Team Development:** Secured strong collaboration among teams and staff, successfully driving the human resources modernization program, maximizing impact and improving overall organizational health.
- **Multinational Partnerships:** Collaborated closely with London headquarters on strategic projects, as well as tactical execution of the human resources and communications modernization agenda.

CHIEF OF STAFF

1/2018 – 4/2019

New Jersey Department of Environmental Protection – Trenton, NJ

Led department through a challenging government transition and successfully strengthened the department and its workforce. Managed department's daily operations with oversight of eight office directors: Budgeting and Finance; Communications and Press; Diversity, Equal Opportunity and Public Contracting Assistance; Emergency Response; General Services; Government Relations; Human Resources; and Information Technology. Advised the Commissioner on development and implementation of policies, goals, and objectives to drive the agency's mission.

- **Transition and Change Management:** Guided leadership changeover, hiring an entirely new team, prioritizing and managing new ideas and projects, leading change management and mitigating risk. Provided stable and decisive leadership for career employees.
- **Employee Engagement:** Transformed a demoralized department and improved employee performance and morale within tight budget constraints. Implemented more flexible work schedules, including an alternate work program.
- **Diversity and Inclusion:** Created chief diversity officer position, empowered affinity groups and reinstituted their celebrations and events, such as Women's History Month and Hispanic Heritage Month, and attracted high-profile speakers, strong attendance and engaged participants.
- **Strategic Negotiation:** Used diplomacy and political skills to negotiate with parties having conflicting interests.

DEPUTY EXECUTIVE DIRECTOR

8/2017 - 1/2018

Senate Majority Office, New Jersey Legislature – Trenton, NJ

Provided executive-level leadership during challenging transition with oversight of staffing, programs, press (writers, researchers), and office operations. Created long-range project timelines for office operations to Senate President.

- **Managed a statewide letter-writing campaign (800-900 letters)** for the Senate President, revamping processes and systems to significantly improve accuracy and professionalism.

DIRECTOR

6/2009 - 1/2017

Office of the Executive Secretariat, U.S. Environmental Protection Agency (EPA) – Washington, DC

Led four teams in office supporting the Administrator and Deputy Administrator with information management and public correspondence functions. Member of advisory body assisting Administrator's Chief of Staff with personnel and facility management, information technology, and human resources. Planned and managed \$5M office budget and contributed to budget planning for Office of the Administrator. Supervised and guided correspondence analysts, Freedom of Information Act attorneys, and records liaison officer. Oversaw management of federal records, responses to Congressional requests and FOIA requests, final review and editing, document preservation, and compliance of all correspondence and documents with statutory and regulatory requirements. Coordinated with audit personnel for Inspector General and other agency audits.

- **Established award-winning processes** for managing Administrator's public email account (1M+ messages received annually) following an agency-wide conversion from Lotus Notes to Outlook.
- **Revised and updated EPA's Correspondence Manual** writing and style guide and led agency-wide adoption.
- **Elected 2012 Chair and 2011 Vice Chair of Council of Federal Executive Secretariats**; spearheaded development and implementation of paperless interagency efficiencies.

CONFIDENTIAL ASSISTANT TO THE ADMINISTRATOR

1/2009 - 6/2009

U.S. Environmental Protection Agency – Washington, DC

As a day-one Obama-Biden appointee, helped stand up and manage operations for the Immediate Office of the Administrator, establish communications procedures for key staff and advisors, and interview candidates. Served as key aide to the Administrator for three months prior to Chief of Staff arrival. Submitted weekly reports to the White House.

- **Reviewed, vetted, and prioritized requests and issues**, assessing which items to escalate to Administrator.
- **Traveled with Administrator** on all domestic and international engagements as body person and key contact.

STAFF MEMBER

12/2008 - 1/2009

Environment and Energy Team, Obama-Biden Transition Project – Washington, DC

Served as point person with EPA officials, transition committee and outgoing EPA appointees on operational transition efforts, including personal security detail, budget, office structure and staffing. Coordinated the selection process for political appointments. Assisted the EPA Administrator nominee with composing and editing confirmation testimony and responses for confirmation process and managed transition correspondence.

SPECIAL ASSISTANT & SCHEDULER TO THE COMMISSIONER / COMMUNICATIONS MANAGER

5/2004 - 12/2008

New Jersey Department of Environmental Protection – Trenton, NJ

Managed Commissioner's schedule while diplomatically balancing urgent requests, priorities, and issues. Oversaw projects requested by Commissioner or Governor's Office. Managed requests from the Office of the Governor, Cabinet members, state legislators, state congressional delegation, federal agencies, state commissions, and local officials.

EDUCATION

MASTER OF SCIENCE IN NONPROFIT ADMINISTRATION / BACHELOR OF ARTS IN POLITICAL SCIENCE

University of Notre Dame - Notre Dame, IN

ACTIVITIES

- **St. Matthew's Cathedral (D.C.) Social Justice Ministry ESL Program**, volunteer tutor for adults, 2010-15.
- **LGBT Capital Tennis Association**, two-term vice president for membership and eight-year member, 2009-2016.
- **New Jerseyans for Alternatives to the Death Penalty**, executive committee member 2006-08 for advocacy group that successfully worked to abolish capital punishment in 2007.

CURRICULUM VITAE

CARLTON MARK WATERHOUSE HOWARD UNIVERSITY SCHOOL OF LAW

Washington, DC 20008

(b) (6)

ACADEMIC APPOINTMENTS:

Howard University Schools of Law and Divinity, Washington, DC,
Director, Environmental Justice Center, January 2019 - present
Professor of Law

Fulbright Research Scholar FAESA University
Vitoria, Espirito Santo, Brazil, January 2018 – May 2018

Indiana University Robert H. McKinney School of Law, Indianapolis, IN,
Director, Environmental, Energy, and Natural Resources Law
Program, June 2016 – 2018
Professor of Law and Dean's Fellow

Indiana University Robert H. McKinney School of Law, Indianapolis, IN,
Professor of Law and Dean's Fellow, June 2013 – December 2018

Christian Theological Seminary, Indianapolis, IN,
Adjunct Professor of Law, January 2014 – 2018

Indiana University Purdue University Indianapolis, School of Liberal Arts,
Adjunct Professor of Latino Studies, January 2015 – December 2018

Indiana University Robert H. McKinney School of Law, Indianapolis, IN,
Assoc. Professor of Law and Dean's Fellow, June 2010 – June 2013

Florida International University College of Law, Miami, Florida
Associate Professor of Law, July 2008 – May 2010,
Assistant Professor of Law, August 2004 – July 2008

Georgia State University, College of Law, Atlanta, Georgia
Adjunct Professor, August 1996 – May 2004

SELECT PROFESSIONAL SERVICE:

- Environmental Law Institute, Board of Directors, 2019 - present
- Fulbright Research Scholar, Vitoria/Rio de Janeiro, Brazil, 2018
- International Sustainable Development Research Society, Track Chair 2020
- Executive Board, National Bar Association, Law Professors Division, 2011-2017
- National Bar Association Member, 2006-2020
- Indianapolis Sustainability and Resilience Action Plan, Consultant, 2017-2018
- United States Commission on Civil Rights, Indiana Advisory Committee, 2014-2019
- Indiana Federal Community Defender Board of Directors, 2014 – 2016

EDUCATION:

Emory University Graduate School of Arts and Sciences, Ph.D. 2006
Woodruff Fellow

Emory University Candler School of Theology, M.T.S. 1999 w/honors

Howard University School of Law, J.D. 1991, Merit Fellow

Pennsylvania State University B.S., 1989

PUBLICATIONS:

Articles

1. *African American Reparations: A Rough Sketch of the Road to Educational and Economic Restoration*, 63 How L. Rev 393 (2020)
2. *Exiting the Road to Resentment: Moving from Reactionary Reconciliation to Social Healing with Justice*, WORLD ENVIRONMENT AND ISLAND STUDIES, Vol. 7, No.4 (2017) (Peer Reviewed)
3. *Reparations: The Problem of Social Dominance*, WORLD ENVIRONMENT AND ISLAND STUDIES, Vol. 6 (lead article), No.1 (2016) (Peer Reviewed)
4. *The Lingering Life of Lead Pollution: An Environmental Justice Challenge for Indiana*, 49 INDIANA L. REV. 99 (2015) (symposium issue) (with Ravay Smith).
5. *Environmental Justice: A Deadly Symptom of Larger Problems*, 3 JOURNAL OF HEALTHCARE, SCIENCE AND THE HUMANITIES 102 (2013) (Peer Reviewed)
6. *A Response to Legal Punishment as Civic Ritual*, 82 MISS L.J. 59 (2013)

7. *Dr. King's Speech: Surveying the Landscape of Law and Justice in the Speeches, Sermons, and Writings of Dr. Martin Luther King Junior*, 30 LAW & INEQ. 91 (2012)
8. *Total Recall: Restoring the Public Memory of Enslaved African-Americans and the American System of Slavery Through Rectificatory Justice and Reparations*, 14 J. GENDER RACE & JUST. 703 (2011)
9. *No Reparations Without Taxation*, 7 PITT. TAX REV.159 (2010) (with Andre Smith).
10. *The Good, The Bad, And The Ugly: Moral Agency And The Role of Victims in Reparations Programs*, 31 U. PA. J. INT'L. L. 257 (2009).
11. *Follow the Yellow Brick Road: Perusing the Path to Constitutionally Permissible Reparations for Slavery and Jim Crow Era Governmental Discrimination*, 62 RUTGERS L. REV. 163 (2009).
12. *Abandon All Hope Ye That Enter? Equal Protection, Title VI, and the Divine Comedy of Environmental Justice*, 20 FORDHAM ENVTL. L. REV. 51 (2009).
13. *Avoiding Another Step in a Series of Unfortunate Legal Events: A Consideration of Black Life Under Law from 1619 to 1972 and a Challenge to Prevailing Notions of Legally Based Reparations*, 26 BOS. C. THIRD WORLD L.J. 207 (2006).

Books

Race, Social Dominance, and the Supreme Court with Tanya Hernandez, Robert Chang, and Michalyn Steele (forthcoming 2021 Cambridge University Press)

Chapters in Books

1. *Reparations: The Problem of Social Dominance* in Jeju 4.3: Grand Tragedy in the Asia Pacific Context (Jeju National University Press 2016) (invited chapter)
2. *Failed Plans and Planned Failures: The Lower Ninth Ward, Hurricane Katrina, and the Continuing Story of Environmental Injustice*, in Hurricane Katrina: America's Unnatural Disaster (Jeremy I. Levitt & Matthew C. Whitaker, eds., U. Neb. Press 2009) (invited chapter).
3. *Environmental Justice*, in Encyclopedia of the African Diaspora: Origins, Experiences, and Culture (ABC-CLIO 2008) (invited contribution).
4. *Reparations*, in Encyclopedia of the African Diaspora: Origins, Experiences, and Culture (ABC-CLIO 2008) (invited contribution).

5. *Engaging Environmental Justice*, in *Global Economy: Strategies for Home, Community, and World* (Westminster John Knox Press 2006) (invited chapter).

Dissertation

The Full Price of Freedom: African Americans Shared Responsibility to Repair the Harms of Slavery and Segregation,

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1674478

Book Reviews

1. Cornelius L. Bynum, *A. Phillip Randolph and the Struggle for Civil Rights*, Indiana Magazine of History (invited) (2012)
2. John Witte, Jr., *The Reformation of Rights: Law, Religion and Human Rights in Early Modern Calvinism*, AM. J. LEG. HIST. (invited) (2010).

PRESENTATIONS AND MEDIA

Select Presentations

1. *The need for reparations to African Americans by the United States*, Organization of American States, Inter-American Commission on Human Rights, Washington, D.C., October 2019.
2. *Social Dominance, Criminal Justice, and Anti-Racism*, National Legal Aide and Defender Association, San Francisco, California, August 2019.
3. *Unsustainable Development*, World Wildlife Federation, Washington, DC, April 2019.
4. *Why Business Matters for Justice*, University of Witwatersrand, Johannesburg, South Africa, October 2018.
5. *Addressing Climate Change: The Role of Local Government*, University of Brasília, Brasília, Brazil, May 2018.
6. *Social Dominance and Criminal Justice*, Brazilian Institute of Criminal Science (IBCCRIM), Sao Paulo, Brazil, April 2018.
7. *Slavery, Universities, and Reparations*, University of Pennsylvania Law School, Philadelphia, Pennsylvania, January 2018.
8. *Human Rights: The Challenge of Social Dominance*, National Cheng Chi University, Taipei, Taiwan, December 2017.
9. *Climate Change in the Era of Donald Trump*, Monash University Law School, Johannesburg, South Africa, July 2017.
10. *Global Social Dominance Law*, Book Talk, Law and Society Annual Meeting, Mexico City, Mexico, June 2017.
11. *Riding the Road to Resentment: Reconciliation without Reparations*, Jeju 4.3 Conference, University of North Carolina, Chapel Hill, NC, May 2017.

12. *Race and Class Dominance in the Post-Civil Rights Era*, Legal Access Division, State Bar of Texas Annual Poverty Law Conference, Dallas, TX, April 2017.
13. *Social Dominance in the Age of Obama: The Criminal Justice System*, National Association of Legal Aide and Defender Association Annual Conference, Plenary Session, Indianapolis, IN, November 2016.
14. *Bottoms Up: Overcoming the Legacy of Apartheid*, University of South Africa, Pretoria, South Africa, August 2016.
15. *Reparations: The Problem of Social Dominance*, Hokkaido University, Hokkaido, Japan, September 2015.
16. *Reparations: The Problem of Social Dominance*, National University, Jeju, South Korea, September 2015.
17. *Total Recall: The Role of Public Memory in Redressing Injustice*, Association for the Study of African Life and History, Atlanta, Georgia, September 2015.
18. *Racial Hierarchy in the Age of Obama: The Criminal Justice System*, University of Arkansas Little Rock School of Law, Little Rock, Arkansas, August 2015.
19. *Are We There Yet? Social Dominance and Affirmative Action in South Africa and the United States*, Durban, South Africa, July 2015.
20. *Social Dominance and the Supreme Court*, Southeast/Southwest People of Color Legal Scholarship Conference, North Carolina Central School of Law, Durham, North Carolina, March 2015.
21. *No Neutral Ground: The Role of the Court in Managing Racial Hierarchy*, National Bar Association, International Affiliates Meeting, Salvador, Brazil, May 2014.

Select Media Commentary:

1. Indianapolis Star, editorial, *EPA Failed to Protect East Chicago Residents* (October 18, 2017)
2. New York Times, Room for Debate editorial, *We Are Witnessing A Societal Movement Toward Climate Justice* (May 23, 2016)
3. The Conversation, *Should the United States Provide Reparations for Slavery and Jim Crow* (May 5, 2016)
4. The Malacast (podcast), *Reparations and Social Dominance* (February 24, 2016)
5. New York Times, Room for Debate editorial, *Reparations Would Hit at the Core of Racial Inequality* (January 28, 2016)
6. WIBC Radio, interview on *Indiana's Challenge to Federal Greenhouse Gas Regulations*, for Indy's Morning News (March 3, 2014)
7. Indiana Lawyer, article interview on *Indiana's Challenge to EPA-led plan to clean up the Chesapeake Bay* (February 26, 2014)
8. Indiana Lawyer, article interview on *Fewer LSATs show reduced undergrad interest in law* (December 13, 2013)
9. Kiss 104 Radio, Kingston, Jamaica, interview on *The March on Washington 50 Years Later*, for Jamaica Speaks with Trevor Munroe (August 28, 2013)

OTHER APPOINTMENTS AND PROFESSIONAL CONSULTANTSHIPS

Bar Review Consultant, 2011 – Present

Bar Review Instructor, 2010 – Present

Literary Attorney, 2002 – 2014

Pro Bono Legal Consultant, 2010 – 2014 and 2016-present

Waterhouse & Associates, Atlanta, GA Director,
January 2001 - May 2004

Associate Regional Counsel, United States Environmental Protection Agency Office of
Regional Counsel, Atlanta, Georgia, 1997 – 2000

Assistant Legal Counsel, United States Environmental Protection Agency Office of
General Counsel, Washington, District of Columbia, 1997 – 1999

Assistant Regional Counsel, United States Environmental protection agency office of
Regional Counsel, Atlanta, Georgia, 1991 – 1997

Legal Extern, United States Environmental Protection Agency Office of General Counsel,
Washington, District of Columbia, January 1991 – 1991

Summer Intern, National Lawyers' Committee for Civil Rights Under Law, Washington,
District of Columbia, 1990 – 1990

PROFESSIONAL ORGANIZATIONS:

Member, Pennsylvania Bar Association (since 1991)

Member, Georgia Bar Association (since 1994)

SUSANNAH LANDES WEAVER

(b) (6)

EXPERIENCE

DONAHUE, GOLDBERG, WEAVER & LITTLETON

June 2016-Present

Partner (2017-present). Litigate complex environmental cases on behalf of environmental non-profit groups in federal and state courts. Lead counsel in several successful challenges to deregulatory actions including efforts to stay, weaken, and rescind environmental protections from oil and gas, power plant, landfill, and vehicle pollution. Manage coalitions of environmental groups, state attorneys general offices, progressive companies, think tanks, and law professors. Oversee all aspects of litigation including developing the litigation plan, creating an amicus strategy, and coordinating with allies. Advise clients on navigating courts, administrative agencies, and Congress to achieve environmental progress.

ORRICK, HERRINGTON & SUTCLIFFE, LLP

Oct. 2013-June 2016

Senior Associate, Supreme Court & Appellate Group. Represented clients in federal and state appeals courts, including the U.S. Supreme Court, in matters concerning federal privacy law, constitutional law, patents and trademarks, environmental, and securities law.

SUPREME COURT OF THE UNITED STATES

July 2012-July 2013

Law Clerk to the Honorable Stephen G. Breyer.

KIMEP UNIVERSITY, Almaty, Kazakhstan

Jan. 2011-June 2011

Assistant Professor. Taught course on legal reasoning and writing to Kazakh L.L.M. students.

COURT OF APPEALS FOR THE SECOND CIRCUIT

Sept. 2009-Sept. 2010

Law Clerk to the Honorable Robert A. Katzmann.

U.S. DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

Sept. 2008-Aug. 2009

Law Clerk to the Honorable Henry H. Kennedy, Jr. Advised judge in Guantanamo Bay detainee cases.

U.S. DEPARTMENT OF JUSTICE, Environment & Natural Resources Division.

July-Aug. 2007

Summer Law Clerk, Appellate Section. Wrote brief defending the U.S. Forest Service in the Tenth Circuit.

U.S. ENVIRONMENTAL PROTECTION AGENCY, Office of the General Counsel

May-Aug. 2006

Honors Law Clerk. Advised on pending litigation, drafted guidance on Superfund settlements, and helped develop wetlands strategy following decision in *Rapanos v. United States*.

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE

Feb. 2002-May 2006

Professional Staff Member. Organized hearings, drafted and steered legislation on federal research, and assisted Chairman with developing strategies and building coalitions in support of progressive environmental legislation.

BOSTON PUBLIC HEALTH COMMISSION

Oct. 1999-June 2001

Managed a City of Boston initiative to improve the City's energy and environmental management.

EDUCATION

GEORGETOWN UNIVERSITY LAW CENTER: J.D., *summa cum laude*, May 2008.

- Lucey Award for student earning the highest academic average during her law school career (GPA: 3.97).
- Mickum, Fegan and Kappa Beta Pi Prizes for student with the highest first year grades.
- Notes editor, *Georgetown Law Journal*.
- Co-President, Environmental Law Society.
- Research Assistant to Professors Richard Lazarus and Lisa Heinzerling.
- Assisted in writing the petitioners' petition for certiorari and merits briefs in successful *Massachusetts v. EPA* litigation, which established EPA's duty under the Clean Air Act to address climate change.

HARVARD COLLEGE: B.A., *cum laude*, Biology, June 1998.

- Honors thesis on pollen production in elevated carbon dioxide environments awarded *magna cum laude*.

PUBLICATIONS

- *Setting Air Quality Standards: Science and the Crisis of Accountability*, 22 TUL. ENVTL. L.J. 379 (2009).
- *When Clarity Means Ambiguity: Statutory Interpretation at the EPA*, 96 GEO. L.J. 1347 (2008) (received Burton Award, awarded annually to 15 law students nationwide, for effective legal writing).
- *Production of Allergenic Pollen by Ragweed (Ambrosia artemisiifolia L.) Is Increased in CO₂-Enriched Environments*, 88 ANNALS OF ALLERGY, ASTHMA & IMMUNOLOGY (2002) (cited over 300 times).

SELECT REPRESENTATIONS

- *Clean Air Council v. Pruitt*, 862 F.3d 1 (D.C. Cir. 2017). Led coalition of environmental groups in securing summary vacatur of EPA's attempt to suspend regulation of oil and gas emissions.
- *Envtl. Def. Fund v. EPA*, No. 18-1190 (D.C. Cir. 2018). Secured judicial stay of EPA's attempt in 2018 to not enforce pollution standards for super-polluting glider trucks; EPA later withdrew effort.
- *American Lung Association v. EPA*, No. 19-1140 (D.C. Cir.). Assist in leading team of lawyers defending legality of Clean Power Plan and challenging Trump administration replacement.
- *Harvest Rock Church, Inc. v. Newsom*, No. 20A94 (Supreme Court). Represented leading epidemiologists and public health experts in amicus brief defending California's coronavirus restrictions.
- *City of Pomona v. SQM N. Am. Corp.*, 866 F.3d 1060 (9th Cir. 2017). Delivered argument for City of Pomona in successful appeal of jury verdict regarding liability for contaminating City's groundwater.
- *State of New York v. Wheeler*, No. 1:18-cv-773 (D.D.C.). Co-lead state and non-profit coalition challenging EPA's unreasonable delay in promulgating pollution standards for existing oil and gas sources.
- *California v. Bernhardt*, No. 4:18-cv-5712 (N.D. Cal. 2020). Led coalition of environmental groups in successful challenge to the Bureau of Land Management's attempt to rescind the Waste Prevention Rule.
- *California v. EPA*, 385 F. Supp. 3d 903 (N.D. Cal. 2019). Worked with coalition of states to secure summary judgment concluding that EPA unlawfully failed to implement regulation of landfills.
- *State v. Bureau of Land Mgmt.*, 286 F. Supp. 3d 1054 (N.D. Cal. 2018). Led coalition of environmental groups in successful effort to obtain preliminary injunction of suspension of Waste Prevention Rule.
- *Whole Woman's Health v. Cole*, 136 S. Ct. 2292 (2016). Authored amicus brief on behalf of Physicians for Reproductive Health in successful Supreme Court case challenging Texas law restricting access to abortion.

BAR MEMBERSHIPS

District of Columbia, Maryland (inactive), Supreme Court of the United States, U.S. Court of Appeals for the First Circuit, U.S. Court of Appeals for the Second Circuit, U.S. Court of Appeals for the Ninth Circuit, U.S. Court of Appeals for the Tenth Circuit, U.S. Court of Appeals for the District of Columbia Circuit, U.S. Court of Appeals for the Federal Circuit, U.S. District Court for the District of Columbia

OTHER

- Member, Board of Visitors, Georgetown University Law Center (2017-Present).
- Regular panelist at events organized by the Environmental Law Institute, American Constitution Society, and District of Columbia Bar, among others.
- Guest lecturer at Georgetown University Law Center, University of Michigan Law School, American University Washington School of Law, and Rutgers Law School.

REFERENCES

The Honorable Robert A. Katzmann, Judge, Second Circuit: Robert_Katzmann@ca2.uscourts.gov
Richard Lazarus, Professor, Harvard Law School: lazarus@law.harvard.edu
Vickie Patton, General Counsel, Environmental Defense Fund: vpatton@edf.org
Lisa Heinzerling, Professor, Georgetown University Law Center: heinzerl@georgetown.edu